JANUARY 2, 1922

AVIATION

VOL. XII. NO. 1

Member of the Audit Bureau of Circulations

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New York Tribune

First to Last—the Truth: News, Editorials—Advertisements

Member of the Audit Bureau of Circulations.

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Until now he was lacking. By this time the good Uncle Sam has so many fleas in his fur that he is in danger of being eaten alive."

Such utterances, there is reason to believe, are approved by only a small fraction of the men and women of German birth or extraction in this country. They come from an insignificant minority of stupid "die hards" or from professional firebrands financially interested in keeping hatreds and animosities alive.

But inevitably their words are quoted and accepted as the views of the opinions of those who thus become victims of their prejudices. Why do they persist in fail to suppress their malignant traducers. Obviously such publications as the "Volks Presse," with their coarse and vulgar abuse of foes to all German names.

The Root Program

The Root proposals for the protection of China, accepted by the conference, reaffirm the essentials of this country's Chinese policy. The United States has never sought ten-

ises well for the youth of the city. The admirable record of the K. of C. chapter at home and with the A. E. F. is an earnest of success. The project calls for $2,000,000, of which $[illegible]0,000 has already been pledged by the Knights themselves.

America's Commercial Aviation

The first annual report on commercial aviation, just made public by the Navy Department, while covering only the operations of one company clearly shows that commercial aerial transport in this country does not suffer by comparison with the activities of European air lines. In fact, it shows that in the matter of safety America leads Europe.

Americans returning from Europe have brought glowing reports concerning air travel there, and the cables have been kept busy transmitting detailed descriptions of the services maintained on the Continent, all to the apparent detriment of American endeavor. In fact, it has been broadly intimated that commercial aviation here had been sadly and reverently laid in a premature grave.

Now we find in the report received by Rear Admiral Moffett, head of the new bureau of aeronautics of the Navy Department, that American civil air transport, far from being extinct, has established a record for itself which even the brilliant performances of European air lines cannot equal.

The first company reporting to the Navy Department is the Aeromarine Airways, and the report shows that during the last year no fewer than 6,814 passengers were carried a distance of 95,020 miles without a single accident or mishap. In addition to this the flying boats operated by this service transported 29,002 pounds of mail and freight.

Included in these operations is the remarkable 'cross-country flight of the Santa Maria, one of the big United States Navy air cruisers converted into an eleven-passenger cabin airplane. This flying boat made a complete circumnavigation of the eastern half of the United States. Starting from Key West, Fla., it flew up the Atlantic seaboard to this city, and then began a 'cross-country flight over the inland waterways, along the Hudson River Valley and Lakes George and Champlain to Montreal, thence over the Great Lakes to Chicago. From the latter city it flew over the Illinois and Mississippi River valleys to New Orleans, a total air distance of seven thousand miles.

If American aerial transport companies can in the coming year maintain this remarkable performance with an equal degree of safety the threatened and feared European commercial air invasion will never materialize.

called Napoleon III foist Maximilian, an duke, upon the thron America, beware!

It is by the abound over two million Frenc dead now moldering ust that Mr. Wells i his echoes of Will English tongue, d German. He "Outline of Ingrat

A Holiday for

Now that Senator Ohio, and Senator K have obtained all the is to be had out of th day resolutions, let until the President an call upon them for as two gentlemen migh chosen some other mea the folks back home th Washington.

Mr. Pomerene and the simplest of telepl addressed to the Navy could have learned that necessity for their resol tically all of the 192 appropriation has be Work has ceased on s on others it is being c reduced pace.

It is to be hoped th Affairs Committee will lutions die a proper death. The committee ety might suggest to men from Ohio and U go on a holiday until t has adjourned.

A Tribune R

Who Has Always Lik and Writes to

To the Editor of The T

Sir: You will probabl ter odd, for it is one o and yet the writer ho more like it are sent to

Years ago, it seems, I and there learned somet gineering, things liter things not mentioned in t One of these was learni appreciate The Tribune. began the initiation into for me, which continued war. We both liked it qualities, even though I the Hughes-Wilson epis

Together we often re both enlisted on reading into the big show. I st went over, and remaine yet in his letters he e the pleasure it gave hi when he found a Tribune wear, but still The Trib

To-day, a Philadelphi awoke from the sleep of read, from force of habi newspaper. Rarely have thing like it. Devoid of news or Le Vrai à la H adequately express the ure it gave the reader.

COMMERCIAL AVIATION PROVEN

We of the AEROMARINE organization are proud of the fact that the pioneer effort put forth during the past year in flying boat transportation has caused this authoritative editorial statement to be published in one of the leading Metropolitan daily newspapers.

Aeromarine Flying Boats are demonstrating daily the *safety* and profit of flying boat transportation—The Aeromarine Navy Flying Boats are the only type used by Aeromarine Airways. We have a limited number for sale and are accepting orders for spring delivery.

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Vol. XII JANUARY 2, 1922 No. 1

AVIATION

WITH this issue, the first of its twelfth volume, AVIATION AND AIRCRAFT JOURNAL changes its name to AVIATION, as it has been popularly known ever since its first appearance.

As in the past, it shall be our constant endeavor to give the reader the kind of information, both popular and technical, which will enable him to form for himself a clear view of the accomplishments, needs, and future possibilities of aircraft in civil and military pursuits. We believe to be able to accomplish this result best by giving the salient facts affecting aeronautics, that is, those having really constructive value, all the space they require, be it even at the sacrifice of sundry aeronautical news which the daily press often records without ascertaining their accuracy.

This feature of accuracy, which has been the guiding policy of AVIATION since its beginning, will remain the mainstay of our policy in the future.

Single vs. Multiple Engines

IT is commonly thought that safety and reliability are necessarily increased by increasing the number of engines.

As a matter of fact the multiple engine plane has its disadvantages as well as its advantages, both of which may be quite definitely figured. For example, comparing a typical two-engine airplane with two single-engine ones, other things being equal, the former has the following advantages:

1. It has half the liability to complete engine failure of either of the two single engine planes (neglecting fuel connections, etc., that may be common to both).
2. It is slightly cheaper than the two small planes.
3. It will carry slightly more, up to a certain size.
4. For short trips the operating personnel would be cut down.

But, at the same time, the two-engine airplane has the following disadvantages:

1. It is twice as liable to engine trouble as either of the small planes.
2. The danger arising from engine stoppage near the ground is probably greater due to the unbalanced thrust of the remaining propeller.
3. The large plane must bear the expense of a full load even when the actual load carried is less than half.
4. The difficulty of making an emergency landing is fully 50 per cent greater than for one of the small planes.

After all is said, the inherent advantages favoring any particular number of engines make but a small balance in either direction. This leaves as the main factor for consideration the fundamental one of choosing a design best fitted for the requirements of the particular service in view.

Airships in Bad Weather

THE narrative of the christening of the new Army airship Roma which appears in this issue affords some interesting indications of the value of the Italian semirigid type which this ship represents.

On the day set for the ceremony strong winds, reaching at times a speed of 40 m.p.h., were blowing between Langley Field and Washington. The Roma overcame these atmospheric disturbances despite the severe handicap of three disabled engines, which froze because the radiators were not fitted with shutters, making the round trip without any untoward occurrence. What adds to the value of this demonstration is the fact that during the christening ceremony in Washington the airship was temporarily moored to the ground, and that in such condition the ship successfully outrode the gusty winds, and withstood the resultant bumping.

It seems extremely doubtful if a rigid airship of the Zeppelin type could have, under the same condition remained mored to the ground without coming to grief.

The inherent flexibility of the semirigid type seems therefore an especially valuable feature for airships which have to operate without the assistance of mooring masts, a case which will be frequent with military airships.

Helium as an Aid to Airship Piloting

THE following note, relative to the Navy's recent trial flights with a helium filled airship, is extracted from one of our scientific contemporaries.

"Helium Dirigible Sails Better, as well as Safer, Than Hydrogen-Filled Ships—Paradoxical though it may seem, the helium gas, twice as heavy as hydrogen with 92 per cent of its lifting power, acts, in an airship, just as a heavy automobile on a road at high speed, in comparison with a light car. Wind currents do not deflect it easily from its path and after it gets under way it travels more smoothly."

This is only another example of the false analogies so often drawn between aircraft and other vehicles. In this case even the premise is wrong for it has been amply proven that a light car *with springs to match* will ride just as well as a heavy one.

In the case of an airship, which is supported by the weight of *air* which it displaces, it will obviously make no difference in the riding qualities whether some given porton of the total weight be carried in the car or in the gas. Nevertheless, helium *does* make an airship steadier and easier riding, but for very different reasons than the above.

Changes in temperature cause helium to contract and expand at a much lesser rate than in the case of hydrogen. As a result the helium balloon is thermally more stable and is less affected by "bumps" and "holes in the air." This effect would be most noticeable in a free balloon, where the aerodynamic factor is a minimum, but it would also effect airships.

7940
PROPERTY U.S. AIR FORCE

Aeronautical Chamber of Commerce Organized

National Body Comprising over 100 Charter or Founder Members Embraces Entire Industry

Organization of the aircraft industry into a national body known as the Aeronautical Chamber of Commerce of America, with approximately 100 charter or founder members embracing the designing, constructing, operating and kindred elements, and representing virtually every section of the United States, was announced Dec. 27 at the Executive Offices, 501 Fifth Avenue. Among other things, it will develop the market and increase the use of flying machines among civilians, corporations and transportation companies.

The aircraft industry thus follows the example of all other modern industries which owe their present greatness in no small measure to the trade association. Organization of the Aeronautical Chamber of Commerce, following as it does the creation of the Bureau of Aeronautics in the Navy Department, and provision, in the Wadsworth-Hicks Bill, for a Commissioner of Civil Aviation in the Department of Commerce, and the nationalization and extension of the Aero Club of America, completes the accomplishments for the year and establishes the machinery whereby, it is believed, the development of American aviation will be greatly hastened.

Its Aims and Purposes

The Aeronautical Chamber of Commerce of America is incorporated under the laws of the State of New York. Among its aims and purposes, as set forth in the Charter, are:

To foster, advance, promulgate and promote trade and commerce, throughout the United States, its territories, possessions, and in foreign countries, in the interests of those persons, firms or corporations engaged in the business of manufacturing, buying, selling and dealing in aircraft, aircraft motors, and aircraft parts and accessories of every kind and nature.

To diffuse among its members accurate and reliable information as to the standing of its members and those persons, firms or corporations engaged in similar lines of business.

To procure uniformity and certainty in the customs and usages of trade and commerce among its members and those persons, firms or corporations having a common trade, business or professional interest in all matters pertaining to aeronautics.

To aid and assist in mapping out air roads and lanes; the location of landing fields, airdromes, hangars, or such other structures as may be necessary for the advancement of aeronautics.

To advocate and promote in every lawful way the enactment of just and equitable laws * * * * pertaining to aeronautics.

To settle, adjust and arbitrate any and all differences which may arise between its members, and persons, firms or corporations dealing with them.

To promote a more enlarged and friendly intercourse between its members and persons, firms and corporations engaged in the business of, or dealing in aircraft, aircraft motors and aircraft parts and accessories and generally to do every act and thing which may be necessary and proper for the advancement of the aeronautical art and industry and the accomplishment of the objects and purposes herein-before set forth; provided, however, that nothing herein contained shall authorize this corporation to engage in any business for pecuniary profit.

"The need for a central trade organization, including within its membership all of the responsible and permanent financial and professional interests in aviation in the country, has been felt for some time," says a statement from the Aeronautical Chamber of Commerce. "The unsettled state of the industry, due at first to the tremendous burdens placed upon it in meeting the demands of wartime production, followed by the complete reorganization of the industry made necessary through the cessation of war contracts, has made it impracticable heretofore to bring this about.

"The existence of the Manufacturers Aircraft Association partly met the need. Its work has been characterized by a broad public-spirited attitude toward the entire industry and has been effective, but its members were the first to realize that an organization limited simply to manufacturers of airplanes, having, primarily, a common interest in the exchange of licenses for the use of patents, could not hope adequately to give representation to the entire field.

"After the Armistice, steps were taken to give consideration to the development of a broader and more inclusive body but, on account of the uncertainty of the future of many of the more important units in the industry, it appeared that the time was not opportune. A start was made however, late in 1919, when Articles of Incorporation were issued. Following this, nothing definite was done beyond continuing the study of the situation and developing a general understanding and agreement relative to the details of such an organization. Study and consideration of these questions culminated a few weeks ago. At that time the plan was crystallized and submitted to representatives of all the various elements in the industry. It is now gratifying to be able to announce that the organization has been completed. Among its charter or founder members are found practically all of the responsible and representative men and organizations in this field. A glance at the list of members of the new organization will at once assure, it is believed, not only the successful future of the organization, but also its instant and important value to aviation and to the country.

"The new organization has taken over the offices and equipment of the Manufacturers Aircraft Association at 501 Fifth Avenue, New York City. The latter organization will continue to serve its members in handling the administration of the cross license agreement covering airplane patents. The Aeronautical Chamber of Commerce will assume and greatly extend all of the functions formerly handled by the older organization, including the collection and dissemination of information regarding aeronautical activities in this and other countries; the publication of the Aircraft Year Book; and the furnishing of special services to its members through its various departments and committees.

"The new organization, including within its membership the principal constructors of airplanes and motors, as well as the manufacturers of accessories, instruments, materials and supplies, owners and operators of aircraft, various aeronautical trade papers and the principal engineers and designers, can be said to be truly representative of the aircraft art and industry in the United States.

"Aviation is a new and important element in our economic and social life and it is desirable that all of those having a permanent interest in the industry be thus brought together. Unification of interests in this important field will be of great significance, not only to the development of civil aviation but to the future security and general welfare of our country."

Founder and Charter Members

Among the founder or charter members are the following: Aeromarine Airways, Inc., New York, Key West & Havana, By C. F. Redden, President; Aeromarine Plane & Motor Company, Keyport, N. J., By I. M. Uppercu, Pres.; David Beecroft, New York, Directing Editor, Class Journal; Luther K. Bell, New York, of Manufacturers Aircraft Association, Inc.; L. W. Bettiger, New York, of L.W.F. Engineering Company; Bijur Motor Appliances Company, Hoboken, N. J., By Charles Marcus, Vice Pres.; Black, A. & D. R., New York, Aeronautical Engineers; J. J. Boland, Keyport, N. J., of Aeromarine Plane Motor Company; S. S. Bradley, New York, of Manufacturers Aircraft Association, Inc.; Burnelli, Vincent J., Lindehurst, L. I., Aeronautical Engineer; John R. Cautley, Paterson, N. J., of Wright Aeronautical Corporation.

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Edson F. Gallaudet, East Greenwich, R. I., Engineer; L. D. Gardner, New York, Publisher, AVIATION AND AIRCRAFT JOURNAL; W. L. Gilmore, Garden City, L. I., Curtiss Aeroplane & Motor Corp.; J. L. Hartness, College Point, L. I., L.W.F. Engineering Company; Stewart Hartshorn Co., New York, By B. E. Bushnell, Sales Mgr.; William Henry, Los Angeles, Calif., of the Douglas Company; George H. Houston, 60 Broadway, New York City; G. Sumner Ireland, Philadelphia, Pa., Curtiss Eastern Airplane Corp.; Johnson Airplane & Supply Co., Dayton, O.; W. Wallace Kellett, Philadelphia, Pa., representing H. & M. Farman; C. Roy Keys, Garden City, L. I., Curtiss Aeroplane & Motor Corp.; E. M. Laird Company, Wichita, Kans., E. M. Laird, President; J. L. Aircraft Corp., New York, John M. Larsen, President.

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Eighteen Years of Flight

In connection with the eighteenth anniversary of the first power flight, made by the Wright brothers on Dec. 17, 1903, at Kitty Hawk, N. C., Orville Wright issued the following statement through the Aeronautical Chamber of Commerce:

"Just eighteen years ago, on the seventeenth of December, 1903, after centuries of endeavor, man for the first time was lifted into the air by a power propelled airplane. Flight seems so easy today that one naturally wonders at the long delay in its accomplishment. Yet eighteen years ago on account of the thousands of failures, flying was classed with perpetual motion and the few who expressed belief in its possibilities were looked upon as mentally unbalanced. Up to 1900, only a few measurements of airplane wings had been made along successful lines. Most flying experiments up to that time had been made on the 'cut and try' plan; and by that plan flight probably would not have been accomplished for centuries yet to come.

"The problem was not one to be solved by guesswork. Duchemin about the middle of the last century had published a formula for calculating the pressure on planes at different angles. Lilienthal in the eighties had published his measurements on several curved surfaces with other valuable scientific work. Langley in the nineties published his measurements of plane surfaces corroborating the earlier work of Duchemin. It was to the work of Lilienthal that my brother and I were by far most deeply indebted. But owing to various defects in the systems of measuring all of this work, we found it too inaccurate and too meagre for purposes of design.

"In 1901 my brother Wilbur and I, having proved by actual gliding tests the inaccuracy of these tables, began a scientific study of the subject. We designed new tables of measuring instruments and made measurements of hundreds of differing wing surfaces in a wind tunnel. It was due to the accuracy of these measurements that we were able, in 1903, to design a new type of biplane, almost entirely from calculation, which was able to lift itself and operator in the air with a crude motor weighing more than twelve pounds per horsepower. We had already developed a new system of control, the system with which our name has been so largely connected, but this system of control would have been of little use without our wind tunnel work which enabled us to design a machine which would lift itself.

"The longest flight on Dec. 17, 1903, was fifty-nine seconds duration at a speed of 30 miles an hour. Today continuous flights of more than 24 hours have been made and speeds in excess of 175 miles an hour reached. Many laboratories in all countries are now at work in this field of science. Who then will attempt to predict what airplanes can do at the end of another eighteen years?"

Offices of Foreign Air Attaches

The office of Captain de Lavergne, French air attaché in Washington, D. C., is now located at 2635 16th St. N. W., and all correspondence should be so addressed. The telephone number is Adams 2414.

The office of Lt. Col. A. Guidoni, Italian air attaché, is located in the building of the Italian embassy, 1400, New Hampshire Ave., Washington, D. C. The telephone numbers are Franklin 6617 and Main 276.

American Aviation in 1921

Statistics Issued by Aeronautical Chamber of Commerce Show Civil Aircraft Carried 275,000 Passengers, Covering 6,500,000 Miles

According to a review compiled by the Aeronautical Chamber of Commerce for the Department of Commerce, approximately 1200 civil aircraft were operated in the United States during the last year, flying a total of more than 6,500-000 miles and carrying approximately 275,000 passengers. The figures are based on authenticated reports from all sections of the country.

"The year was crowded with important events," says the review, "and Government, State, municipal officials and transportation experts are agreed that civil aeronautics must be developed for peaceful transport and as a reserve arm of the national defense.

Air Mail Service

"The U. S. Air Mail Service in 1921 made such a record for efficiency on the transcontinental route that it is recognized as a model for civilian aerial transport the world over. Letters have been delivered in New York two days after casual mailing on the Pacific Coast. The service has an average of 88.82 per cent efficiency, that is, completed trips on scheduled time since it was started in May 1918. The Air Mail has during the last year completed its wireless communications system, the fourteen stations now having radio plants, three operated by the Navy Department and the others by the Air Mail Service. Last February, a continuous flight, with night flying, was made between San Francisco and New York. Mail leaving the Coast at 4:50 p.m. February 22nd, was delivered in New York at 4:50 p. m. February 23rd.

"Governors of States and heads of Federal bureaus, realizing that fast transport depends upon proper terminal facilities have started campaigns for the acquisition of municipal landing fields. Ordinances regulating aerial traffic have been passed and enforced in scores of municipalities. Almost all large cities have aerial traffic regulations. State legislatures and municipalities in passing legislation have made it clear that local regulations are temporary and designed to be superseded by the national code when it is effected. The American Bar Association, Aero Club of America, Aeronautical Chamber of Commerce of America, Manufacturers Aircraft Association and the National Aircraft Underwriters Association, the Society of Automotive Engineers and the National Advisory Committee for Aeronautics have recognized the necessity for a national aerial code. Their views have found expression in the Wadsworth-Hicks Bill now before Congress providing for a bureau of civil aviation in the Department of Commerce. This bureau, among other duties, will have supervision over all commercial aircraft and pilots.

World's Records

"Among the world's records made during the year in America were those of Lt. J. A. Macready of the Army Air Service, who in September reached an altitude of more than 37,800 ft. above Dayton, Ohio; parachute drops of from 22,000 to 25,000 ft. made by Lt. A. G. Hamilton and Sergt. Encil Chambers of the Army Air Service; and the closed course speed record made by Bert Acosta in a Curtiss-Navy racer at the Pulitzer Race in Omaha in November when he covered a triangular course of 150 miles at a speed of 176.3 m.p.h.—260 ft. a second. The Loening Monoplane Flying Yacht carried four passengers to an altitude of 19,500 ft. over Port Washington, L. I., in August. A Martin twin motored bomber attained a height of 25,600 ft. at Dayton, O.

"Other spectacular performances included the transcontinental flight of Lt. W. D. Coney from San Diego, Cal. to Jacksonville, Fla., 2180 m. in 22 hrs. and 27 min.; the bringing of an army airplane to a dead stop within 15 ft. after landing by means of the reversible propeller; the flight of the Aeromarine 'Presidente Zayas' from New York to Havana in 19 hrs. flying time; the 4,842 mile flight of the two U. S. Marine Corps planes in charge of Lt. Col T. C. Turner from Quantico, Va., to Santo Domingo and return; and the 3,200 mile flight of the twelve Navy seaplanes from San Diego, Cal. to Panama. Then there was the feat, repeated for days, of the Army, Navy and Marine Corps planes which flew 100 miles out at sea and dropped tons of explosives on the surrendered German craft off the Virginia Capes last June and July.

First National Airway

"There were many accomplishments, less spectacular, but no less important and significant of the rapid development and increasing importance of flight. The first American National Airways was opened by the Army Air Service between Bolling Field, Washington, D. C. and Dayton, Ohio. The Navy Department released four million dollars worth of flying boat equipment for the civilian market at greatly reduced figures.

"Aviation units are being organized in the National Guard in many of the States of the Union. Many improvements were made in airplane design and in the internal combustion engine. Motors were made more reliable, more economical as far as fuel consumption is concerned, and more efficient. New types of motors are being built, including the Wright, Lawrance, Packard, etc., radial, air-cooled, and steam, and what promises to be one of the most powerful in the world—an internal combusion engine of 700 hp. under test at McCook Field, Dayton, Ohio.

"There were several distinct scientific advances. The aerial torpedo was produced, a secret invention and one of far reaching influence on aviation in peace and war. The 4,300 lb. aerial bomb was also made and tested successfully, and so were the Larsen all-metal armored monoplane carrying thirty machine guns, the torpedo carrying plane and the navy triplane scout. The geared propeller and multiple drive system was tested successfully by the Gallaudet Aircraft Corp. at East Greenwich, R. I. It permits the connecting of three motors to one propeller. Perhaps a dozen different types of small sport machines were produced in this country in 1921. The Sperry 'Messenger' with Lawrance motor, the Sport-Farman, the Thomas-Morse racing monoplane, the Laird Swallow, the Longren folded wing sport plane, and others were introduced during the year.

Naval Air Developments

"The U. S. Navy completed its giant airship hangar at Lakehurst, N. J. The Navy blimp C-7 was filled with non-inflammable helium gas and flown over Washington, D. C. to demonstrate its practicability. Lt. Ross Kirkpatrick made an American endurance flight record in a Curtiss plane of 18 hrs. and 6 min. at Mitchel Field, L. I. The Foster Russell Aviation Co. of Spokane, Wash., made a 25,000 mile advertising flight among 225 towns in the Northwest. The Aeromarine 11-passenger flying cruiser 'Santa Maria' flew 9,000 miles on a Summer flight from Havana, Cuba to New Orleans via New York, Montreal, Toronto, Detroit, Chicago, St. Louis, and Memphis. The Navy launched a seaplane from its first catapult at League Island Navy Yard, Philadelphia, preparatory to equipping surface craft with fighting and scout planes. Fifteen flying boats of Aeromarine Airways alone flew 100,000 miles and carried 6,814 passengers, 29,002 lb. of freight and mail between Key West and Havana and on the Atlantic Coast Army, Navy and Marine Corps fliers made many important aerial surveys, such as those of the Olympic Pensinula in Oregon, the Mississippi River Delta and the coastline of several islands in the West Indies.

"Forty-one army airplanes operated on the Aerial Forest Patrol in the National Forests on the Pacific Slope made 396 patrols in the last season, discovered 832 fires and daily provided protection to 7,230,459 sq. mi. of valuable timber land. The

new Dayton Wright forest patrol seaplanes were placed in operation in Canada during the Summer. Marine Corps planes used in revenue service located many stills on the Eastern Coast and on one occasion, last September 2nd, located an entire moonshine village. The Bureau of Aeronautics was organized by the Navy Department thereby co-ordinating the various divisions of Naval aviation. The First Air Brigade was organized by the Army Air Service at Langley Field, Va. Fliers patrol the entire Mexican border daily. The airplane rendered invaluable aid in flood, fire and pestilence, one of the most notable occasions being the Pueblo, Colo. flood last June.

"Approximately a score of flying meets were held in this country in 1921. Typical of these were the races, meets and demonstrations on Long Island, in Florida, Hartford, Conn., Baltimore, Chicago, Kokomo, Ind., Dallas, Denver, Oakland and Long Beach, Cal., several in Iowa and Nebraska and one of the most important, the American Legion Flying Meet at the national Convention in Kansas City, Mo., Oct. 31-Nov. 2nd."

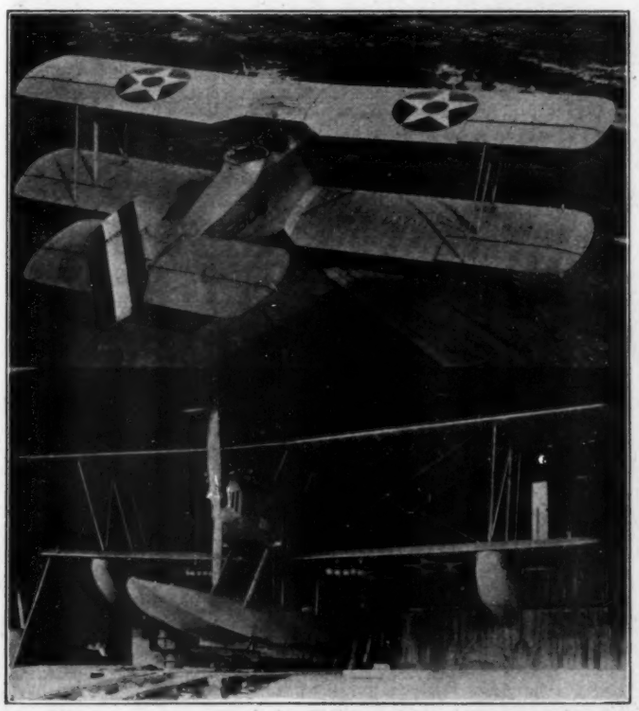
The Elias EM1 Expeditionary Airplane

The Elias EM-1 illustrated and described herewith was built by the aireraft department of G. Elias & Bro., Inc., Buffalo, to meet the requirements of the Navy for a practical expeditionary airplane. One of its principal construction features is its quick convertibility for either a land or sea use, a matter particularly advantageous to the service intended. The operation is effected by removing the chassis as an integral unit, and fastening a central pontoon and side floats to the fittings.

As expeditionary service demands landing on unprepared ground and in small fields, the landing gear is especially rugged, and the machine has a quick get-away and rapid climb.

The U. S. A. 27 aerofoil, a high lift section, is employed to advantage, only a single bay each side of the body being necessary for interplane bracing. A rather pronounced stagger improves the vision of the occupants over the conventional biplane.

The stabilizer is adjustable in flight to "trim ship", and the tail surfaces are oversize to insure complete controllability at low speeds.



Elias EM1 expeditionary airplane: above fitted as a land machine, and below as a seaplane

A brief description follows:—

WING GROUP—
Aerofoil—USA 27, Chord 80 in., Gap 72 in.
Incidence—4 deg.
Dihedral- -1 deg.
Stagger—22 deg.
Sweepback—none
Decalage—none
Area—482 sq. ft. including four ailerons.

TAIL GROUP—
Stabilizer—Adjustable through 4 deg., Area 41.5 sq. ft.

ELEVATORS—
Unbalanced. Area 31.5 sq. ft.

FIN—
Area 7 sq. ft.

RUDDER—
Area 20 sq. ft. balanced.

BODY—
Conventional stick and wire construction. Engine mounting unusually rigid.

LANDING GEAR
Big wheels 900x200 and laminated struts combine to make a sturdy chassis. Tail skid steel tubing. Chassis and wing skids quick detachable.

WATER GEAR—
Richardson type main pontoon with large side floats. Pontoons constructed of two ply spruce veneer.

POWER PLANT—
Wright Model H Engine, rated 300 hp. Bijur electric starter, Sylphon gasoline pump and fixed gun synchronizer equipped. Water and oil radiators.

EQUIPMENT—
Complete instruments complement and useful load items as specified by the Navy. Crew two, guns two. Fuel provided for 2 hr. full speed.

PERFORMANCE—

Gross weight land plane			3986 lb.
High speed	"	"	102 m.p.h.
Landing Speed	"	"	48 "
Climb in 7 min.			4000 ft.
Service ceiling			17000 ft.

DIMENSIONS—

Overall span			39 ft. 8 in.
"	length, land plane		27 ft. 8 in.
"	height	" "	10 ft. 11 in.
Tread			5 ft. 6 in.

In the Canadian Air Force

A draft plan for the training of university cadets by the Canadian Air Force, and by that means providing a reserve of fliers and aeronautical mechanics in case of need, has been submitted by the Air Board to the various heads of universities in Canada for consideration and comment. The plan includes the giving of a three months' course for three consecutive years to university students who are desirous of studying areonautical engineering where they can secure first-hand information. The number taking the first course, which is proposed for opening about May 1, 1922, will be limited to thirty. Students must be under 21 years and unmarried.

At the request of the Department of Militia and Defence, a complete aerial survey has been made of the Petawawa Military Reserve, comprising approximately 240 sq. mi. Photographs were taken from a Bristol fighter at an altitude of 8,000 ft., giving a mosaic 1/8000, which when completed and mounted on beaver board was twelve by fifteen feet in size. It was afterward reduced by the Department of Militia and Defence to a scale of 1/20,000. The photographs turned out remarkably well and all concerned expressed satisfaction, as full details were given in all sections of the photographs to enable an accurate map to be made. Six hundred feet of film, giving approximately 600 exposures, and about fifteen actual flying hours were required for the purpose of obtaining the pictures.

Facts on Aircraft Insurance

By E. Stockton Martin

Granting that satisfactory insurance protection is necessary as a foundation on which to build up commercial aviation, and admitting also that companies offering this form of protection have had a tendency to continually increase the rates and at the same time narrow the coverage, it is not to be wondered at that the aeronautical industry is demanding an explanation.

There must be some reason for this situation. One commercial operator attributes it to lack of competition, or to be more frank, the cornering of the insurance market by a few large companies. Others reason along the lines that companies are taking advantage of the necessity of insurance protection and, to use a slang expression, are "getting theirs while the getting's good". Perhaps the most firmly established idea is that aircraft insurance is little sought after by the insurance companies, and is used only as a medium of advertising for other lines.

It is a comparatively simple matter to theorize upon the cause underlying present conditions, and the tendency to look to the insurance companies for relief is a very natural one.

History of Aircraft Insurance

A review of the brief history of aircraft insurance may help to throw new light on the situation. The first demand for coverage was created shortly after the armistice by the disposal to the public of airplanes constructed for war purposes. Several insurance companies ventured into the fields at that time, but one by one withdrew when they were confronted with a loss on almost every policy that was issued. This heavy loss ratio may be attributed partly to lack of previous experience to guide the insurance companies in writing the business, and partly to the general unsettled condition of the aeronautical industry. The only planes that could be purchased were inadequate for commercial use. The majority of pilots had been trained solely for combat flying and, fresh from the war, were anxious to demonstrate their ability in this country. The public was willing to pay well for exhibitions of dangerous and foolhardy aerobatic feats and for joy hops which consisted of five or ten minute flights with passengers. The result was an epidemic of serious crashes.

At the close of 1919, conditions had been very little bettered, but the industry showed signs of rapid development. Several other large insurance companies were led into the field and underwriters familiar with the flying conditions undertook to write the business. They were faced at the outset with the knowledge that the undertaking could never be a profitable one until the fever of aerobatic flying had abated. They realized also that a great part of the risk of insurance depended on the pilot and that an attempt should be made to accept risks and adjust rates on this basis. Lacking both governmental and state licensing bureaus, the companies set out to obtain the previous experience and capabilities of each individual pilot before allowing him to operate an insured plane, by making it necessary for him to fill out a questionnaire or "pilot's statement" as it was called. With the knowledge that there was no method of verifying these statements, and knowing that insurance rates were dependent upon them, many pilots endeavored to take advantage of the fact by increasing the actual number of hours flown, omitting to report accidents and in other ways changing their records to make them acceptable for insurance.

This misinformation upset the whole theory of aircraft underwriting. The insurance companies were left without choice in the matter and were forced to increase rates on all classes of pilots to take care of losses which were incurred by operators of planes who would never have been accepted had it been possible to reveal their true records beforehand. Almost every policy holder requested a permit to do aerobatic flying. When permission was denied the plane was stunted in spite of policy restrictions, and when a crash occured as it frequently did, the insurance companies were called upon to pay the loss. Aircraft manufacturers had not yet responded to the call for commercial service and continued to mark time and rid themselves of pre-war material. A few new types were placed on the market, but they were of little except sport value.

At the close of the season many of the insured planes had greatly depreciated from hard usage. Doubtful fires occured shortly before the termination of policies. It was a difficult matter to trace the source of these fires, and again the insurance companies were called upon to settle. These difficulties combined with the absolute lack of air navigation laws and a limited number of established landing fields added the finishing touch.

Loss Ratio on Fire and Collision

Dividing seaplanes and land planes into two classes, the combined figures of all companies writing aircraft business showed a loss ratio on the former for fire which amounted to 95 per cent of the premium income and for collision 87.5 per cent. On the latter the loss ratio for fire was 135 per cent and collision 202.6 per cent. The average loss on both fire and collision was therefore over 130 per cent. Added to this was an acquisition expense, the cost of maintaining the business, of 40 per cent. Much of the latter expense was incurred in an effort to bring about better flying conditions, and in the publicity of data urging more conservative flying.

The question may be asked why the insurance companies continued to carry on the business when it proved to be so unprofitable. Was it in the hope of regaining in the following year all the money that had been lost? Most assuredly not. Losses were charged to experience and the companies undertook to make use of the knowledge which had been so costly to obtain. A careful analysis of the business was made. The outlook for some commercial use was more encouraging. Aerial photography, survey work and map making by air seemed feasible, and some more or less profitable attempts were being made to carry on this work. Plans were being laid for the establishment of overland passenger carrying and cargo routes. Some interest had been stimulated in aeronautical circles to impress the government of the urgent need of federal legislation by establishing the international laws of the air. Everyone directly or indirectly connected with the industry had lost money, but aviation had become too firmly established to slide backward. The insurance companies could not afford to slight the necessity of increased rates, but only a nominal increase was made. Their decision was to stay in the business, endeavor to grant coverage to worthy owners of planes in good condition and operated in a conservative manner. The effect of this action has been noticed and commented on by the industry at large. It was unfortunate, but necessary, that policies be more restricted.

Situation Regarding 1922

The situation for the year 1922 is not so discouraging. There is every reason to believe that the vital federal legislation is almost at hand. The supply of war material for the most part has been dedicated to the scrap-heap and new types of airplanes, designed and built to offer a steady and reliable commercial service, are being placed on the market.

In spite of complications and trying conditions, insurance companies have refined the system for the investigation of pilots' records until there is now only a slight possibility of altering actual experience. Insurance in excess of market values has been avoided, thus eliminating fires which might be attributed to moral hazard. The refusal to grant insurance where there is any possibility of aerobatic flying, on airplanes which are used for "barnstorming", and on those in poor condition has helped to lower the loss ratio. The insurance companies even with bettered conditions have not made money on aircraft business, but the peak of high rates has been reached. The industry may look forward to better and less costly insurance with the opening of the next flying season.

Commercial Aviation *

By Charles F. Redden

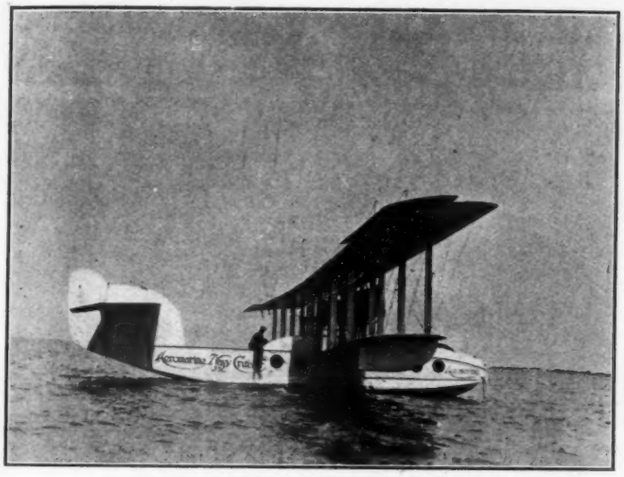
President, Aeromarine Airways, Inc.

History shows that every invention which has afforded an improvement in transportation methods has led to world-wide adoption; and furthermore, the history of progress has been largely history of improved transportation.

Any method of travel which is safe, comfortable and delightful and which permits the business man to reduce the distance, in time, between two cities to one-third or one-fifth of what it now requires, must ultimately prove popular.

Furthermore, any method of travel which opens up to the public the millions of acres of wonderful mountain, seashore or lake-side country, now practically inaccessible for living purposes, cannot fail to become popular when the public once realizes that these points can be reached easily and safely, and within an hour or two from thickly populated districts.

Just as the automobile opened up the rural districts and made it possible for a business man to live twenty miles from his office and motor into town, so will the airplane ultimately



The Aeromarine flying boat Santa Maria

extend that zone of population from twenty miles to one hundred miles, and homes will be built on the shores of lakes and rivers and in inaccessible mountainous districts which are now practically worthless except for camp sites.

How to Expand Commercial Aviation

There are many things that we can do and should do to bring about these conditions.

First, we must have adequate laws covering the licensing of pilots, inspection of planes, prohibition of all kinds of stunt flying except for military purposes, and other safe-guards which are now being splendidly taken care of by experts in Washington.

The next most important subject in my mind is organized, constructive advertising and publicity.

Today, the press is doing more to stimulate interest in aeronautics than all other influences combined. I think, however, that a little organized effort in each community on the part of everyone interested in aviation will enable us to obtain even more helpful cooperation from the press in the future. At the present time, many editors, some of whom are not familiar with all the facts, give undue prominence to accidents caused by pilots doing various flying stunts for moving picture or exhibition purposes. Because of their news value, these stories frequently give many harrowing details which frighten the public and lead them to believe that all flying must necessarily be dangerous.

As a matter of fact, these accidents have no more to do with the safety of conservative flying than tight-rope walking has to do with a pedestrian, and it seems apparent that if this point was carefully explained to the average publisher or editor, he would get our viewpoint and many of these articles would be tempered accordingly. It is apparent that this result can be obtained because all editors are anxious to boost the industry from a purely business standpoint. Aside from that it will soon be apparent that from a standpoint of national defense, it is up to every patriotic citizen to do all he can to stimulate commercial aeronautics and not do anything that will injure it.

Third, another factor which will educate the public to the advantage of air transportation and hasten the period when it will be recognized as a necessity, is the organization in every community of a flying club or flying company, with one or more flying boats or airplanes and with sufficient spares to keep their craft always in good flying condition. These flying organizations, if properly managed, can easily be made to pay and their organizers will be rewarded by obtaining first-hand information of an industry which will soon be an important one in their community; and they will also profit to the same extent as the men who, eighteen years ago, had the enterprise and vision to take an active part in the automobile industry.

There is probably no other line of endeavor where the customer will spend so much of his time boosting and advertising, as does the passenger who takes a ride in an airplane, and with local companies adequately financed, operating throughout the country, constantly making more converts to flying, the era of commercial aviation will be greatly advanced.

The Experience of an Air Transport Company

Eighteen months ago we inaugurated a passenger carrying service around New York, up and down the Sound and from New York to Atlantic City. After five months' operation, we felt justified in enlarging our operating organization and on November 1 of last year, a fleet of six 11-passenger converted Navy flying boats inaugurated a daily mail and passenger service between Key West and Havana and also between Palm Beach, Miami, Bimini and Nassau.

Although the Havana harbor is probably one of the most difficult points on the map from which to operate, and notwithstanding the fact that neither Key West nor Havana affords any particular commercial advantage, when compared with industrial centers such as New York and Chicago, or Detroit and Cleveland, the service is officially recognized as a desirable means of travel. This service has proven beyond any question of a doubt that a commercial line between such points as Cleveland, Detroit or other cities similarly located, would prove not only profitable but would meet a great public need.

During the past year, our fleet of fifteen boats has flown nearly 100,000 miles. They have carried 6,814 passengers and 29,002 pounds of freight and mail, and without a single serious mishap.

The distance from Key West to Havana is approximately one hundred miles, which our boats cover in one hour and fifteen minutes, whereas the time by steamboat is approximately ten hours, and due to the roughness of the Gulf Stream, it is not always a pleasant passage.

Last Spring, we sent one of our 11-passenger flying boats, the Santa Maria, on a trip from Key West to New York to Montreal, down the St. Lawrence to Toronto, to Buffalo, Detroit, Mackinaw and Chicago, thence down the Mississippi River to New Orleans, and then back to her base at Key West. This was the longest commercial airplane flight ever taken. We made a stop at practically every city and town of any importance en route. We would come down in a more or less unknown harbor where no provision whatever had been made for our direction or convenience—we would take on fuel, take

* Address delivered before the Metropolitan Section, Society of Automotive Engineers, Dec. 15, 1921.

a few passengers for sight-seeing hops, and then "take off" to come down again in some other strange harbor. This flight covered a little over 7,000 miles, at an average speed of 75 m.p.h., with no special bases or service stations en route.

When you analyze these facts, gentlemen, it is not difficult to visualize the possibilities of commercial aviation. All we have to do is to convince the public it *is* safe and sensible.

We must eliminate some of the "bunk" that has been handed out in regard to the cost of flying, and educate people to realize that they must pay and be willing to pay for the saving of time and the luxury and the safety which *properly* organized air travel affords. No one expects to go to Chicago in a drawing-room on the twentieth century at the price of a ride in a caboose on the Erie, and it seems to me that the more we talk about competing with the railroads, the more we will defeat our own project.

We hear a great deal these days to the effect that the success of commercial aviation depends upon our first developing more economical motors and more efficient planes. In my opinion, this is getting the cart before the horse. We will of course, have refinements and big improvements for years to come in the design and manufacture of both planes and motors, but these improvements will come as the result of increased public interest and a realization of the advantages of flying.

The tremendous improvements and refinements in the automobile came as a result of public education and public demand, and it seems to me that the same condition will apply to the development of better and more efficient aircraft.

The big point is that it is *now safe to fly*—that is the thought we must "get over"—in fact, if you use a flying boat and fly over water where a safe landing place is always available, with a careful pilot and good equipment, the risk is no greater than travelling by railroad and certainly not as great as travelling by motor car.

"Safety First"

Speaking of more efficient motors and more highly developed planes, we have learned after eighteen months experience, that the gasoline and oil bills, while of course worthy of consideration, are more or less insignificant in reckoning the total costs of introducing and maintaining a safe, dependable passenger service. The building up of an efficient organization, the training of pilots and mechanics, and instilling the "safety first" idea, the cost of advertising and learning how to overcome the many problems that present themselves daily (which are entirely different from military aviation) are the elements which determine the cost of commercial flying. These costs will not be materially reduced until flying clubs and flying organizations are established in the principal cities throughout the country on a sound, sensible basis and the people learn by experience that flying is not only safe but necessary.

This development will increase the demand for flying, and also the volume of passenger business, and decrease the price per passenger mile, in the same manner identically as it has increased the quality of automobiles, and reduced their price.

We are frequently asked why we use flying boats exclusively instead of land planes. The answer is:

First, there is a large percentage of the public who would not go up in a land plane, but who will take a flight in a flying boat because they feel that a safe landing place is always available. The result is the cost of procuring passengers is not so great as with the land plane.

Second, many of these people would not think of travelling at the high altitude considered safe for flying over land, whereas flying ten or fifteen or one hundred feet above the water does not seem to worry them.

Third, with flying boats we eliminate the necessity of expensive landing fields, often located at remote parts of the city. Our landing fields are rivers, harbors and lakes, and as the business center of every port is near the water front, our anchorage is always convenient to the hotels and to the center of business activity.

For the above reasons, we believe that for some time to come, flying boat operations will afford greater returns for the money and effort expended than in operating land machines. Admitting that sane flying is safe and that it affords charm and enjoyment besides, the question arises whether it can be made profitable. The answer is,—*emphatically, yes*, if it is conducted along business lines and careful thought given to eliminating the many petty extravagances which creep into any new business.

The Question of Operating Costs

The actual cost of operation, depends, of course, upon the number of flying hours got out of each boat per day or week, and just how the administrative overhead is allocated. The operating costs which I am about to make public are based on the operation of the converted Navy boats equipped with one and two Liberty motors, and while there are, no doubt, other types of aircraft which show a lower fuel cost per passenger mile, that saving is insignificant when contrasted with the low initial cost and the safety of these Navy boats for passenger carrying purposes.

The following figures include everything but administrative overhead and advertising. The latter items are not included because we have spent thousands of dollars in national publicity in an endeavor to call to the public's attention the possibilities of aviation. These boats have been used to a large extent in that work—in fact, the expense of a trip from Key West, up the Coast to New York, and around the Great Lakes and down the Mississippi is all included in our administrative overhead and advertising.

Therefore, our figures show the actual operating costs and the possible profits, operating to capacity four hours per day.

COST OF OPERATING AN F5L 11-PASSENGER AEROMARINE NAVY FLYING CRUISER WITH TWIN LIBERTY MOTORS

45 weeks per year
4 flying hours per day
5 days per week
Valuation—$30,000
Life of Motors—800 hours each
Life of Boat—3 years
Insurance—32 per cent
Interest—7 per cent
Gasolene consumption for Liberty Motor—cruising speed—27 gal. per hour
Oil consumption—cruising speed—1½ gal. per hour
Oil—$.80 per gallon
Gasolene—$.25 per gallon
Pilot—$75.00 per week
Mechanic—$45.00 per week
Bowman—$30.00 per week

Cost per flying hour includes pilot, mechanic and bowman, fuel, maintenance, depreciation, insurance and interest	$71.12	
INCOME—		
Based on prevailing charges—either $40.00 per flying hour or $10.00 per 10-minute sight-seeing flight per passenger.		
Figuring 9 passengers per load at $10.00 per passenger for 10-minute flights	$90.00	
4 flights of 10 minutes each	360.00	per hour
4 hours per day	1440.00	" day
5 days per week—20 flying hours	7200.00	" week
Figuring 5 passengers per load at $10.00 per passenger for 10-minute flight	$50.00	
4 flights of 10 minutes each	200.00	" hour
4 hours per day	800.00	" day
5 days per week—20 flying hours	4000.00	" week
Total Income		
Figuring 9 passengers per load	$7200.00	
Total Cost	1420.58	
BALANCE	$5779.42	
Total Income		
Figuring 5 passengers per load	$4000.00	
Total Cost	1420.58	
BALANCE	$2579.42	
These balances allow liberally for administrative expense, advertising and dividends.		

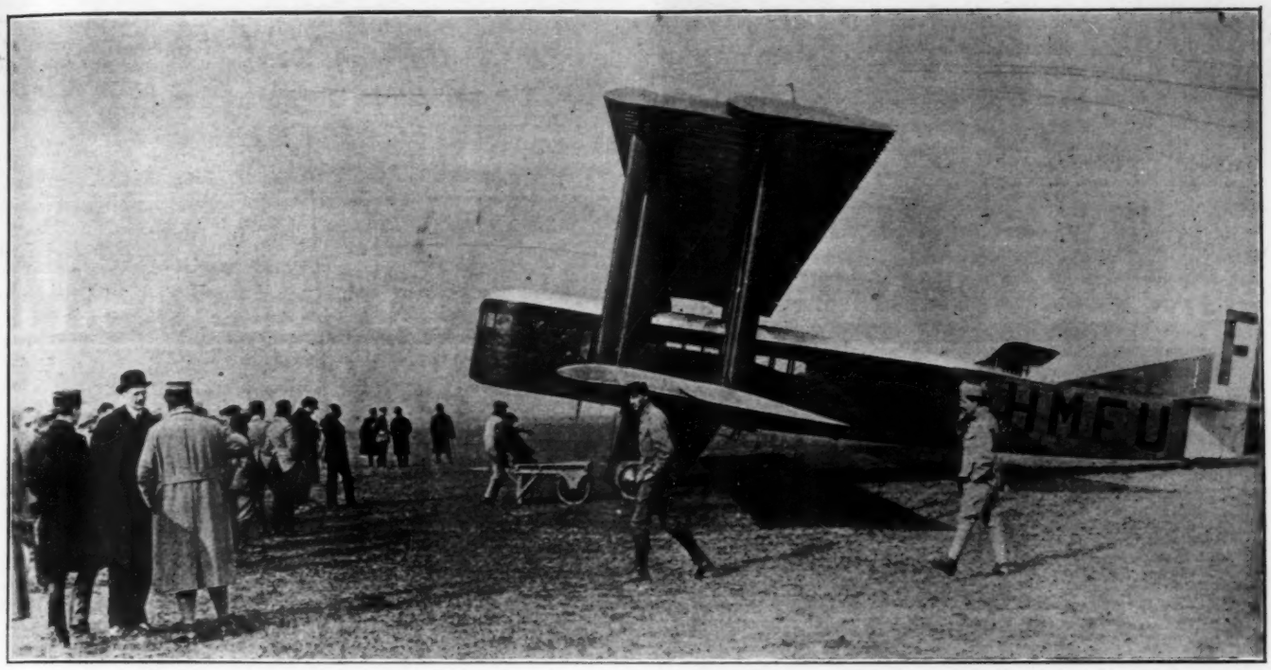
COST OF OPERATING AN HS2L SIX PASSENGER AEROMARINE NAVY FLYING BOAT WITH LIBERTY MOTOR.

45 weeks per year
4 flying hours per day
5 days per week
Valuation—$7,500
Life of Motor—800 hours
Life of Boat—3 years
Insurance—32 per cent
Interest—7 per cent
Gasolene consumption for Liberty Motor—cruising speed—27 gal. per hour
Oil consumption—cruising speed 1½ gal. per hour.
Oil—$.80 per gallon
Gasolene—$.25 per gallon
Pilot—$50.00 per week
Mechanic—$35.00 per week

Cost per flying hour, including pilot, mechanic, fuel, maintenance, depreciation, insurance and interest	$29.98	
INCOME—		
Figuring 5 passengers per load at $10.00 per passenger	$50.00	
4 flights of 10 minutes each	200.00	per hour
4 hours per day	800.00	" day
5 days per week—20 flying hours	4000.00	" week
Total Income:		
Figuring 5 passengers per load	$4000.00	per week
Total Cost	599.72	
This allows liberally for administrative expense, advertising and dividends	$3400.28	

Aeronautical Lessons from Europe*

By Ralph Upson



One of the most successful commercial airplanes operated in Europe: the Farman "Goliath," accommodating twelve passengers (two 260 hp. Salmson engines)

In going back and forth between Europe and America, I have discovered a very curious bit of psychology. In this country it seems to be the style, among those aeronautically inclined, to hold Europe up as a model, to call particular attention to her selected successes in commercial aviation, her government subsidies, her published statistics, with exhortations to the United States to go and do likewise. But when I get to Europe I find precisely the same attitude with respect to us. "Watch America," they say, "she is really doing things. Look at the huge number of passengers carried in the last year, the success of the aerial mail, the organization of a big airship company."

Suppose we follow through along this line:—We copy Europe, Europe copies us. Where do we get? Where does anyone get by mere copying? We have our own condition, and our own problems to solve, for each of which there is only one best solution. We have capable men and adequate facilities, with a volume of high grade traffic and a valuation of time unexampled anywhere else in the world.

Taking aeronautics as a whole, the possibilities in America are far more encouraging than in Europe. A study of European developments cannot help but be of great value, but we must use the lessons gained as a help in working out our own plans, not as a substitute for them.

Now that we have cleared the air a little, let us see what has really happened in Europe. There is no use going further back than the end of the war. During the first few months of peace great numbers of aircraft of all different sizes were dumped, scrapped or otherwise disposed of. Airplanes were literally as cheap as dirt. As business was still generally good, it was a great incentive to try and use some of these planes and accessory equipment for commercial purposes.

To accomplish anything it was first necessary to give aviation some kind of a legal status, especially for international service. So the allied nations got together and framed up a most valuable code covering rights and duties of operators, responsibilities to the public, requirements for safety, etc., which is the basis for everything that has since been done in Europe. America does not share any benefits of this work because it was dimly related to the League of Nations (pardon me of course for mentioning the name).

Commercial flying was well started within a year after the armistice; but the operating companies soon found that they were losing money, in spite of the fact that they were getting their planes and terminal facilities practically for nothing. We now know the reason; that the average war airplane was a poor investment for commercial use *even when accepted as a gift.*

Subsidies or No Subsidies?

At that time the most obvious solution of the financial difficulty was government subsidy. France led the way with very liberal subsidies, and it must be admitted that aviation in France today is in a very flourishing condition, as far as the actual operating companies are concerned. But I do not feel that the French got far enough with the unsubsidized industry to really give it a good trial. Experience from England is more enlightening in this respect.

The English cross-channel service was started in the spring of 1919 by the Airco and Handley-Page. Both used made-over war machines, but as far as the passenger accommodations were concerned they were carefully redesigned. They ran for a little over a year, not making any profits, but also not losing much. The fare from London to Paris, reduced to American currency, was about $42. In the spring of 1920 they were beginning to realize that merchandise was a great deal cheaper to haul, pound for pound, than passengers. So, in a last attempt to produce profits, the express rates were reduced and the passenger fares raised. In the meantime the competition of the subsidized French lines was getting very serious, resulting in a substantial reduction of both passenger and express rates.

The condition of the British lines came quickly to a crisis. Mr. Holt-Thomas, the head of the Airco system withdrew from the field. He wrote me soon afterward that he was far from discouraged about the future of aviation but that under ex-

* Speech made at the Aeronautical Session Dinner of the Society of Automotive Engineers.

isting conditions he simply could not make it pay. He claimed the principal trouble was that the traffic was not big enough; that they could make sure profits even on the lower rates if they could get more volume of business, particularly merchandise. But people were not yet educated to appreciate the value of fast transportation.

The Handley-Page Co. soon after got assurance of government support and continued to operate. The Instone Air Line was organized on a basis of similar promises and took over what was left of the Airco business. Thus England entered the regular subsidy class.

Regularity on European Air Lines

Today both French and English lines operate between Paris and London on a fare of $21 which is not quite double the first class fare by train and boat. Government subsidy has been accepted as a practical necessity by nearly every country in Europe. In France, in a little over a year's time, passengers carried increased two and a half times, merchandise three times and mail four times. Several of the companies have run through the whole season without a single accident. The regularity also has been suprisingly good. Let me give you an example:—On September 18, the day of the International Balloon Race from Brussels, we started up in a wind of over 30 m.p.h., and the worst kind of general weather conditions. After landing, two days later, I learned that with the exception of the balloons not a single aircraft had been able to cross the Channel that day. *But is was the first time since March that the service had been so completely suspended.*

Air Lines are now branching out to every important point in Europe. There is a time table for example that gives full information for all lines originating in France. A regular schedule is maintained from Toulouse, France, to Casablanca on the west coast of Morocco, a straight line distance of nearly 1000 miles, and an airship line is to be started next spring.

Fundamental Fault of Subsidies

But with all this encouraging development it does not seem thoroughly sound. The statistics are all right, but statistics cannot tell the whole story. To speak plainly "there is something rotten in Denmark," and in every other country for that matter. The fundamental fault is that the subsidy is granted almost entirely for military reasons. For the most part it is essentially a premium on mere operation. Where new designs are encouraged, stress is put on the military features. It is an inherently vicious system because it is self perpetuating, by discouraging the only kind of development that can put aviation on its own feet. In this I am not trying to criticise European methods which have been conspicuously successful for the purpose they were meant for. But the American people have had a very just suspicion of any kind of direct subsidy. Not only that but I think I voice the majority opinion of aircraft men themselves by saying that we do not need and do not want any subsidy for the operation of aircraft in America. With all due respect to the steamship companies, we do not want an industry that has to be continually nursed to keep it alive. If that is the kind of business we are pushing, it does not deserve any help.

But is there anyone so pessimistic as not to believe in the future of aviation? I do not feel that it is necessary at this late day for me to take up your time simply arguing the importance of aviation. Let us be done with merely asking and answering the same old question, "Will aviation be worth while?" That question is absolutely settled; it will be worth while, and all we need to do is go out and make it so. I say "we" in a broad sense to include of course our own Government. We may very well feel that some of the foreign governments are too paternalistic, but that does not mean that we should sit and do nothing. How could our railroads ever have developed without government cooperation? We can at least do as much for aviation.

I need hardly mention the main essentials, on which everyone seems to be in agreement. Some form of central governmental bureau for civil aeronautics such as provided for in the Wadsworth-Hicks bill, is the most natural starting point. Public confidence, safety of operation, the financing of new undertakings, the lay-out of routes and a proper basis for insurance will all be much facilitated by proper government cooperation. But while we are justly concerned with the means and methods for promoting the use of aircraft we must not forget the main purpose, the big idea. Let other nations back comercial aviation for its military value. If we can only develop its real commercial value, the other will take care of itself; for a self-supporting, going industry which is an economic asset to the country is the best military asset as well. To attain this, the most serious problems are the technical ones mainly involved in the design of the machines themselves.

A Suggestion

The other papers this evening have made ample reference to what some of these problems are. But the circumscribing problem of how best to encourage their early solution has not apparently been touched on. I will close with a very definite suggestion:—France is spending $2,500,000 per year on aircraft subsidies which shows every indication of being perpetual. Let our own government set aside, once and for all, one fifth of this amount which France spends in a single year. Divide it up into a series of prizes for the best new designs to accomplish the following objects respectively:

1. Safety for passengers.
2. Economy for merchandise and mail.
3. Night flying.

If this is done properly there is every reason to believe that the personal risk can be cut down to 1/20th of its present value, little though it now is; that mail can be carried for a cost per pound 1/30th the present cost, successful though our air mail already is, that aerial transportation will open up a great new field of its own, not to the injury of present transportation systems but supplementing them to the great advantage of the whole public.

Night Flying at Kelly Field

Preparations have been made at Kelly Field, San Antonio, Tex., for night flying, if conditions permit. The new XBIA planes, attached to the 13th Squadron for service tests, will be used. Almost all known tests have been applied to these ships, except cross country flying and their maneuverability in muddy landing fields.

Captain Lloyd L. Harvey, the squadron commander, has requested permission to fly one of these ships to El Paso, Texas, on cross-country, and it is thought that this trip will complete the required tests. A number of suggestions for improvements have been made by officers who have flown these ships, the most prominent among them being the provision of some means of eliminating the excessive friction in the ailerons and elevators.

Coming Aeronautical Events

AMERICAN

Jan. 9—Annual Banquet, Aero Club of America.
Apr. 30—Spring Show and Opening Meet, Curtiss Field, Mineola, L. I.
Sept. 4—Detroit Aerial Water Derby, Detroit. (Curtiss (about) Marine Flying Trophy Competition.)
Sept. 15—Detroit Aerial Derby, Detroit. (Pulitzer Tro- (about) phy Race.)
Sept. 30—First Annual Interservice Championship Meet. (In preparation.)

FOREIGN

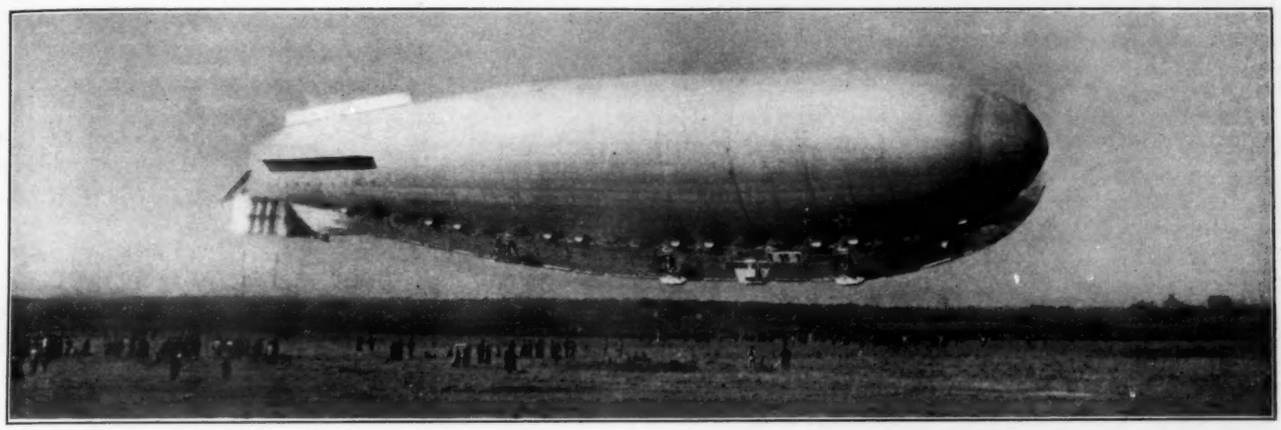
Aug. 1—Coupe Jacques Schneider. (Seaplane speed (about) race.) Italy, probably Venice.
Oct. 1—Coupe Henri Deutsch de la Meurthe. (Airplane speed race.) France.
American elimination trials, if required, to be held about Aug. 15, at Mitchel Field, L. I.

Christening of the Army Airship Roma

Largest Semirigid in the World is Christened with Liquid Air After Stormy Trip from Langley Field

The Army airship Roma, which recently made her maiden trip from Langley Field, was christened with an unusual ceremony on Dec. 21 at Washington, D. C., when Miss Fonrose Wainwright, daughter of the Assistant Secretary of War, broke a bottle of liquid air on the bow of the semirigid.

The christening ceremony took place at Bolling Field, whither the airship had flown from Langley Field after bucking a strong head wind for five hours and a half. The voyage was satisfactorily completed with a return trip to Langley Field, except that four of the Roma's six Ansaldo engines froze on the northern trip. The radiators of these engines, which were designed for the much milder Italian climate, proved to be oversize for the cold temperatures encountered on these trips.



U. S. Army Air Service Photo

The U. S. Army airship Roma leaves Langley Field on one of her trial flights

Although one of the troublesome engines was thawed out en route, and the Roma arrived over Langley Field with three engines turning steadily, another engine again gave out on the homeward trip. The Ansaldo engines are not housed in nacelles, but are freely exposed to the air stream, so that in cold weather they are easily chilled. It is the intention of the Air Service to replace these engines eventually with low compression Liberty engines, which develop about 350 hp.

The Trip from Langley Field

Leaving Langley Field at 6.30 a. m., Major J. G. Thornell, the Roma's skipper, made the trip up most of the way on three engines against a strong northwest wind in five and a half hours. He flew low and had some difficulty in negotiating the hills surrounding Bolling Field after he turned to the west in preparation to land.

The Secretaries of War and of the Navy, with Ambassador Ricci of the Italian Embassy awaited with a big crowd of Army and Navy officers and guests for nearly three hours in the cold and wintry blasts which swept over the low field in Anacostia on the banks of the Eastern Branch of the Potomac. From time to time they were entertained by the Army Band which played in an American and Italian flag decked stand, and the stars of the Air Squadrons who performed aloft. Lieut. Wolfe, who was once "lost" in Mexico, gave a generous display of his aerobatics in a SE-5 which thrilled the crowd and in some measure warmed their chilled thoughts and bodies.

Though constantly in touch with the Roma by radio, and in receipt of messages announcing her approach, it was discouraging not to be able to see her, and the crowd was impatient as well as cold. But finaly the airship's arrival over Alexandria was announced and then the field was filled with a throng which looked aloft and peered toward the south in a vain search for the great airship. Presently a little before noon she appeared just over a hill to the east. Slowly she approached, flying very low and fighting every inch of the way with her engines crippled. Gradually she drew over the field, the mooring lines were dropped, and the great crowd of soldiers and sailors—the handling crew—which had been dancing and stamping on the cold field since nine in the morning got into action. Nosing her down, Maj. Thornell with the aid of the handling party on the ground finally landed his gigantic aircraft. Steadying lines were dropped from ports along the V shaped keel and she settled on the bumpers but continued to rock sidewise in the breeze from the west. The engines were run to keep her head into the wind and aid the men to hold her as steady as possible.

The Ceremony

The ceremony which followed consisted of three parts. The official transfer of the airship, for which the United States paid Italy $185,000, was made by Ambassador Ricci to the Secretary of War in a speech extolling Italian-American friendship. Then followed the presentation of the new battle pennant to Assistant Secretary of War Wainwright by Lieut. General Vaccari of the Italian army, who made the following speech:

"By order and in the name of His Excellency the Minister of War. Deputy Gasparotto, I have the honor to deliver the battle pennant to the airship which, coming from Italy, will keep in the United States, through your kind permission, Mr. Secretary of War, the illustrious name of 'Roma.'

"From this moment the flag of the 'Roma' will become a sister to your glorious battle flags which, after having won on the fields of honor a cause of justice and civilization, are now an inspiration to preserve such justice and civilization by the bloodless struggles of peace.

"O glorious flag of the United States which will cross the American skies on an airship planned and constructed in Italy, may thou, waving above an Italian name, remind to the aeronauts, the soldiers and the citizens of the United States, the Italo-American brotherhood affirmed anew in the conquest of the ways of the air, and may thou strengthen it with even closer ties in every flight of thine."

General Vaccari having finished speaking the christening proper followed. All the time the great ship was tugging at her mooring and swaying back and forth. The crowd had to move with the ship and when Miss Wainwright stood on a step ladder just under the curving bows and broke a bottle of liquid air on the nose of the ship, everyone jumped back,

uncertain of the effect of this "fluid atmosphere." But only a harmless blue mist appeared, followed by a tiny snow flurry, as the glass broke and the air splashed the prow of the ship. "I christen thee Roma and induct thee into the U. S. Army Air Service," said the sponsor as the bottle crashed against the stiff breastbone of the aircraft.

It was planned to conduct this part of the ceremony from a small free balloon held by cables over the bow of the ship—a literal aerial christening with air from the air, but the strong winds of the morning had rendered the balloon unmanagable and it was deflated and put away before the Roma arrived.

When the Roma first came over the field it was noticed that her ensign was upside down, as if in distress, but a closer view revealed the fact that the upper fastening had pulled loose and let the flag hang from the lower one, inverted. Soon after the landing was effected this flag was hauled down and the new flag raised properly in place astern the great box like rudder, to the stirring music of the Star Spangled Banner from a nearly frozen band.

An inspection of the ship followed, General Patrick, Chief of Air Service, conducting the officials and other invited guests aboard for a view of the spacious operating room, with its two helms, one on either side, its window-lined cabin and the long passage way provided in the keel of the ship.

The Return Trip

The sight-seeing trip over Washington and to Baltimore which was originally planned, was called off by General Patrick after a consultation with the Commander of the Roma and the officials of the Weather Bureau in view of a threatening increase in the wind and general rough weather for aerial cruising. At about one o'clock the field was cleared, the "gassing" of the ship started, and additional sand bags put aboard, while the officers and crew partook of a hasty lunch provided by the Bolling Field Commissary. Nothing could be done to improve the engines even temporarily and although the airship left with four operating, one gave out again en route to Langley Field, leaving two on one side and only one on the other, making navigation a little awkward.

At 2.20 p. m. all but the crew were put ashore, and doors and hatches were secured. The handling crew eased up on the head line and the ship rose slowly until clear, when the ground men let go and, with full speed ahead, the Roma started off into the wind on her homeward trip. Circling gradually to the south she soon gained speed as the wind caught her stern and sped southeast toward her home hangar.

An uneventful but much quicker return run was made down the Potomac to Hampton Roads, where the ship arrived safely at 5.10 according to a report received at Bolling Field headquarters.

Some Comments

In one corner of the field there was assembled a little group of "old timers" in the air service including Colonel Chandler, Lieutenant Colonel Bamberger and Majors Lahm and Baldwin, who helped design and fly the Army's first airship, the "No. 1," in 1908. One of them said the "old No. 1" was scarcely larger than the small free balloon which was to have been used to lift two people for the christening, but they all seemed delighted at the future prospects of an Army Air Service with real ships like the Roma and expressed themselves as being glad that they were still in the service to see the day of practical lighter-than-air ships arriving.

Lieut. Col. A. Guidoni, Italian air attaché in Washington, made the following statement in regard to the Roma's christening:

I think that the landing performance of the Roma at Bolling Field this morning, in a gale, is sure proof of the good qualities of the Italian type of airship as well as the skill of the American pilots. Nobody thought that a big airship of 1,200,000 cu. ft. could be handled with only 200 men on the ground and landed in a wind of 40 m.p.h. Although the ship kept four of its 450 hp. engines running at full speed, she could hardly advance against the wind. When the airship was moored on the ground, the squalls were so strong that a kite balloon had to be deflated so as to avoid its destruction. The flight of the Roma can be considered as one of the finest performances ever accomplished and it is a great honor for Italian Aeronautics that the airship has been handled so skillfully by Major Thornell and his officers and crew.

Diggins' Fliers Traveled 70,270 Miles in Year

The 1921 annual field report of James Curran, Chief Instructor of the Ralph C. Diggins School of Aeronautics, shows remarkable attainment for Chicago airmen. The annual report, which covers activities of the Diggins' fliers from April up to the closing of business, Nov. 30th, 1921, shows a total of 1028 hr. in the air, a total of 15,000 flights and landings, and nearly 100 students graduated and qualified as pilots during the year. This necessitated 750 hr. instruction in the air. Mr. Diggins points out that this is probably a record for aerial instruction never before accomplished by any school in America.

The cross-country flying included a record breaking trip from New York to Chicago with six passengers and express for Marshall Field & Co. and three other trips to New York and return. Other cross country flights with the big passenger plane included Indianapolis, Lincoln, Nebr., Des Moines, Ia., Cleveland, Ohio. Smaller planes made cross-country flights to West Baden, Ind., French Lick, Ind., Louisville, Kentucky, and Des Moines, Iowa, New York and North Platte, N. D.

It required 9.6 gal. of gasoline per hour for the operation of the Diggins' planes for the entire year. This average is arrived at by including all type planes flying under all conditions in the sum total before striking average so a much lower average would probably be arrived at, if individual performances were considered only.

500 aerial photos were taken by the aerial photography department of the Diggins' Aviation Co., most of which were taken in Chicago. However, the aerial mapping of this company included South Bend, Elgin, Aurora, West Baden, French Lick, Ind., and practically all of Chicago suburbs.

It will be remenibered that the Diggins' Aviation Co. started the year 1921 with practically a total loss by fire which necessitated the reestablishing of the school of instruction and transportation company.

Contenders for the Collier Trophy

Contenders for the Collier Trophy should present their claims in writing to the Collier Trophy Committee, Aero Club of America, 11 E. 38th St., New York City, before Saturday, Jan. 7, 1922, as the award of this trophy will be announced at the 14th Annual Banquet of the Aero Club of America, Jan. 9, 1922.

This bronze trophy to be known as the Aero Club of America Trophy, was presented by the late Robert J. Collier. The trophy is awarded annually for the greatest achievement in aviation in America.

The first award was given to Glenn H. Curtiss for his development and demonstration of the hydroairplane during the year 1911.

In 1912 the trophy was again awarded to Glenn H. Curtiss for his development and thorough demonstration of the flying boat, in which buoyancy is supplied by a boat like hull.

In 1913 the trophy was awarded to Orville Wright in recognition of the development and demonstration of his automatic stabilizer.

For 1914 the trophy was awarded to Elmer A. Sperry, for his work in achieving the automatic control of an airplane by means of the gyroscope.

The trophy for the year 1915 was awarded to W. Starling Burgess, of Marblehead, Mass, in recognition of his development and demonstration of the Burgess-Dunne seaplane during the year 1915.

The trophy for 1916 was awarded to Elmer A. Sperry for the development and thorough demonstration of the Sperry Drift Set.

This trophy was not awarded during 1917 or 1918 on account of the war.

The Collier Trophy Committee consists of: Henry N. Crane, chairman; William Larned, James A. Blair, Jr., Caleb S. Bragg.

"Who's Who in American Aeronautics"

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Every week, AVIATION AND AIRCRAFT JOURNAL prints the biographical sketch of men who are prominent in American Aeronautics. These sketches will be published later in pamphlet form. As so many of the officers change their stations often, it is believed that a semi-annual issue will be necessary. In compilations of this character many errors and omissions occur. It will be appreciated if corrections are sent to "Who's Who" Editor.

Leon Richardson

RICHARDSON, LEON, Shipping; born, Rose Valley, Pa., March 18, 1888; son of George Thomas Richardson and Rachel Richardson; married, Florence J. Eslinger, Jan. 17, 1918.

Educated: Public schools of Merchantville, N. J.; University of Washington.

Professional: 1906, Street Railway and Electric Light and Power at Winona, Minn.; Mills Aviators, 1907; Exploration in Arctic Ocean, Northern Alaska and Siberia, 1909; Steamshipping in Alaska, 1911-1914.

Aeronautical Activities: Begun flying in old Curtiss Pusher Types at Cicero or Hawthorne, Chicago in 1908-1919; later in 1910-1911 at Curtiss Field, San Diego, gave exhibition flying; engaged in building with Art. Smith, Nels Nelson and Victor Carlstrom, 1909; instructor at San Antonio and sent as one of the first flyers to open Wilbur Wright Field, remaining there until Dec. 1917; ordered to Washington and worked on instruction of pilots and bombers until end of war.

Flying Rating: Expert Pilot's Certificate.

War Service: Joined as private at Fort Monroe, Nov. 1916; promoted to Sergeant, 1st Lieut., Captain and Major, Nov. 1916 to 1919.

Books: "Bombing"; "Instruction in Flying and Aircraft Building".

Present Occupation: Assistant to the President, U. S. Mail Steamship Co.

Address: 610 Riverside Drive, New York City.

Edwin Mayo Ronne

RONNE, EDWIN MAYO, Commercial Aviation; born, Minneapolis, Minn., Nov. 28, 1893; son of T. E. Ronne and Anna (Mayo) Ronne; married, Grace Elmendorf, M.D., Feb. 21, 1920.

Educated: Public schools in Montana; B.S. in Electrical Engineering, 1917, University of Montana.

Aeronautical Activities: Ground School, Berkeley, Calif., 1917; primary training at Wilbur Wright Field; bombing training at Ellington Field, 1918; pursuit gunnery instruction, Arcadia, Fla.; Officer in Charge Flying, 271st Bombing Squadron, Aberdeen Proving Grounds, 1918; student, aeronautical engineering, M.I.T., 1918; pilot and factory student, Curtiss Aeroplane and Motor Corp., 1919-1920; manager of Curtiss Field, Buffalo, N. Y., 1921.

Flying Rating: Reserve Military Aviator, March 1918.

War Service: 1st Lieut., U. S. Army Air Service, May 1917 to March 1919.

Member: Secretary and Treasurer, Aero Club of Buffalo, N. Y.

Present Occupation: Curtiss Aeroplane and Motor Corp.

Address: 71 Kail St.; home, 1054 E. Ferry St., Buffalo, N. Y.

Alfred James Butterfield

BUTTERFIELD, ALFRED JAMES, Florist; born, Lees Summit, Mo., Dec. 14, 1889; son of Maurice Butterfield and Luvina (James) Butterfield; married, Leanna Richeson Cole, March 21, 1917.

Educated: Public schools of Farmington, Mo.; business college.

Aeronautical Activities: Ground School, University of Illinois, 1918; training at Camp Dick, Scott Field and Paine Field, July 1918 to Jan. 1919.

Flying Rating: Pursuit Pilot.

War Service: As above.

Present Occupation: Florist.

Address: Farmington, Mo.

Clinton Wilbur Howard

HOWARD, CLINTON WILBUR, Major, Air Service; born, Brockton, Mass., Nov. 27, 1890; son of Ernest C. Howard and Ida P. Howard; married, Lois Alexander Pool, Sept. 10, 1918.

Educated: Public schools of Brockton, Mass.; Clark College.

Professional: 1915-1921, U. S. Army.

Aeronautical Activities: Attached Aviation Section Signal Corps, July 1916 to date.

Flying Rating: Junior Military Aviator, 1917.

Present Occupation: Student, Aero Engr., M.I.T.

Address: 155 Newburg St., Brockton, Mass.

Benjamin D. Foulois

FOULOIS, BENJAMIN, D., Major, Air Service; born, Washington, Conn., Dec. 9, 1879; son of Henry Foulois and Sarah A. Foulois.

Educated: Public schools of Washington, Conn.

Professional: Corporal and Sergeant, Volunteer Engineers, 1898; Private to 1st Sergeant, Co. G, 19th Inf., 1899-1901; 2nd Lieutenant to Captain, 1901-1914; Major, Aviation Section, Signal Corps, 1917; Brig. Gen. (Temp.), Air Service, July 1917 to July 1919; Assistant Military Attache, Germany, since May 1920.

Aeronautical Activities: Detailed to aviation duty at its birth in the United States Army in July 1908; with Lieutenants Lahm and Selfridge, operated first Army Dirigible Balloon and first Military Airplane in U. S. Army; Observer with Orville Wright in 1909 on first cross-country flight made by airplane in the United States; three world's records made on this flight; 1910, took first airplane to San Antonio after approximately one hour instruction in flying; Jan. 1910-March 1911, only officer in Army on flying duty; taught himself to fly during this time; designed and successfully used first set of wheels used on Wright airplane in U. S.; 1911, designed first airplane radio sending set ever used on airplane in U. S.; 1911, broke world's cross-country record with passenger, flying from Laredo to Eagle Pass, Tex.; 1913, reorganized training system, aviation school, San Diego; 1913, designed first portable field machine shop truck in U. S.; 1914, organized, equipped and trained the first Aero Squadron; commanded first Aero Squadron in Mexico during the Mexican Punitive Expedition in 1916; made many flights into Mexico and on one occasion was mobbed and put in penitentiary at Chihuahua City while flying with dispatches from General Pershing to American Consul; 1916, planned establishment at Kelly Field; 1917, technical advisor in preparation of $640,000,000.00 aviation bill; Chairman, Joint Army and Navy Technical Aircraft Committee of the War and Navy Departments Chairman, Joint Army and Navy Aircraft Committee, Paris Branch; American Member of the Inter-Allied Aviation Expert Committee of the Supreme War Council; Chief of Air Service, A.E.F., Nov. 1917 to May 1918; Chief of Air Service, 1st Army, May 1918 to July 1918; Assistant Chief of Air Service, (Z of A) July 1918 to Oct. 1918; Assistant Chief of Air Service (Service of Supplies), Oct. 1918 to June 1919; relieved as Chief of Air Service on his own request and assigned to duty of Assistant Chief of Air Service, Zone of Advance; assisted in drafting of the Convention for the Rules and Regulations of International Air Navigation.

Flying Rating: Junior Military Aviator, 1914; Military Aviator, 1917.

War Service: As above.

War Honors: Commander Legion of Honor; Air Service Citation; Distinguished Service Medal for conspicuous services in organizing A.E.F. Air Service, negotiating for the procurement of aircraft material, organization of schools and instruction of personnel; valuable assistance in connection with maintenance of Air Service Squadrons at the front.

Present Occupation: Army Air Service, Assistant Military Attache, Germany.

Address: American Embassy, Berlin, Germany.

Harry Bigelow Porter

PORTER, HARRY BIGELOW, Construction Engineer; born, Hartwick, Iowa, Aug. 22, 1893; son of Charles G. Porter and Margaret Porter; married, Esther Sumner, July 12, 1919.

Educated: Public schools of Holly, Colo. and Boise, Idaho; B.S.E.E. 1914, E.E. 1919, Iowa State College.

Professional: Engineering, six years with Bell Telephone Co.; 1914-1921, Division Office, Des Moines, Iowa.

Aeronautical Activities: Air Service Radio School, Columbia University; Army Air Service one year.

Flying Rating: Reserve Military Aviator.

War Service: Oct. 1917 to Jan. 1919.

Present Occupation: Exchange Construction Engineer, Northwestern Bell Telephone Co.

Address: 1006 Grand St.; home, 1114 Locust St., Des Moines, Iowa.

Robert Gordon Thach

THACH, ROBERT GORDON, Lawyer; born, Burnside, La., Dec. 27, 1891; son of Robert H. Thach and Stella (Bringier), Thach; married Mary Munger, June 16, 1917.

Educated: Public schools of Birmingham, Ala.; A.B. 1910, Washington and Lee University, Lexington, Va.; LL.B. 1912, University of Alabama.

Professional: Practiced law in Birmingham, 1912-1916; member of firm, Thach and Underwood; served in Army, 1916-1919; practiced law in New York City since May 1919; member of firm, Whitman, Ottinger & Ransom since June 1920; member of Association of the Bar of City of New York.

Aeronautical Activities: Air Service, A.E.F., Oct. 1917 to Jan. 1919; Officer in Charge Observation Training, Training Section, Air Service. A.E.F., 1918.

Flying Rating: Reserve Military Aviator, Sept. 1917.

War Service: 1st Lieut., 1st Alabama Cavalry, Aug. 1916 to July 1917; Cadet, 1st Lieut., Captain and Major, Air Service.

War Honors: French Legion of Honor; citation by C. in C., A.E.F.

Member: Aero Club of America; Bar Association of City of New York.

Present Occupation: Lawyer.

Address: 120 Broadway, New York City; home, 439 Rochelle Terrace, Pelham Manor, N. Y.

George A. Vaughn, Jr.

VAUGHN, GEORGE A. JR., Engineer; born, Brooklyn, N. Y., May 20, 1896; son of George A. Vaughn, Sr. and Grace (Sours) Vaughn.

Educated: Adelphi Academy, Brooklyn, N. Y.; B.S. 1919, Princeton.

Aeronautical Activities: Princeton S.M.A., July 1917; S.M.A., Oxford, England, Sept. 1917; flying training at various schools in England; commissioned 2nd Lieut., 1st Lieut., and Captain during service; ferry pilot between England and France, 1918; active service at the front with 84th Squadron, R.A.F.; joined 17th American Aero Squadron as Flight Commander (Cambrai Sector); moved south to Toul Sector in Nov. 1918.

Flying Rating: Reserve Military Aviator, March 1918; Junior Military Aviator, Feb. 1919.

War Service: As above.

War Honors: Distinguished Service Cross; four citations; Distinguished Flying Cross; officially credited with having destroyed thirteen enemy planes.

Member: Princeton Club; New York Flying Corps; Princeton Engineering Association.

Present Occupation: Engineer, Western Electric Co.

Address: 463 West St., New York City; home, 441 Washington Ave., Brooklyn, N. Y.

Henry Lilly Smith

SMITH, HENRY LILLY, Cotton Business; born, Concord, N. C., Jan. 1, 1887; son of Thomas W. Smith and Mary H. Smith.

Educated: Public schools of Concord, N. C.; Trinity Park High School; 1909, Trinity College.

Aeronautical Activities: S.M.A., University of Texas; training at Taylor and Carlstrom Fields, 1919.

Flying Rating: Reserve Military Aviator.

Present Occupation: Cotton Business.

Address: P. O. Box 552, Kannapolis, N. C.; home, 31 Marsh St., Concord, N. C.

Willis Ira Stebbins

STEBBINS, WILLIS IRA, Auto Accessories; born, Gothenburg, Nebr., March 29, 1895; son of W. M. Stebbins and Aris (Wilcox) Stebbins.

Educated: Public schools of Gothenburg, Nebr.; University of Nebraska.

Professional: Implement dealer; 1916, Border Patrol with 5th Nebraska Co. L.

Aeronautical Activities: S.M.A., Austin, Tex; training at Scott Field, Camp Dick; flight commander at Kelly Field; commercial flying, 1919.

Flying Rating: Army Corps Pilot.

War Service: As above.

Present Occupation: Auto accessories.

Address: 1420 Lake Ave., Gothenburg, Nebr.

Horace Moore Sherwood

SHERWOOD, HORACE MOORE, Agriculturist; born, Allegan, Mich., March 25, 1894; son of Mayhew Sherwood and Winona (Moore) Sherwood.
Educated: Public schools of Allegan, Mich.; Phillips Exeter Academy; University of Michigan.
Professional: Grower, buyer, distributor, winter vegetables.
Aeronautical Activities: 1917-1919 Air Service Ground and Flying Schools; Gosport Instructor.
Flying Rating: Reserve Military Aviator; pilots license.
War Service: Air Service, Army, Dec. 1917 to June 1919.
Present Occupation: Agriculturist.
Address: Box 483, Fort Myers, Fla.

Harry Jennings Runser

RUNSER, HARRY JENNINGS, Commercial Aviation; born, Bluffton, Ind., July 23, 1890; son of John Runser and Anna Runser; married, Hilda Webb, April 3, 1914.
Educated: Public schools of Ft. Wayne, Ind.
Professional: Contractor, interior decorator, 1912-1916; meat products, 1916-1917.
Aeronautical Activities: S.M.A., Austin, Tex. 1918; training at Chanute Field and Payne Field; commercial flying, March 1919 to Dec. 1921.
Flying Rating: Reserve Military Aviator.
War Service: Air Service, Aug. 1917 to Dec. 1918.
Member: Aero Club of America.
Present Occupation: Flying and lecturing.
Address: R. F. D. 7, Ft. Wayne, Ind.

Walter Eugene Cleveland

CLEVELAND, WALTER EUGENE, Commercial Aviation; born, Coventry, Vt., April 2, 1895; son of Henry C. Cleveland and Mary G. Cleveland.
Educated: Coventry Grammar; St. Johnsbury Academy; 1913-1914, Cornell University.
Professional: 1920-1921, Hood Rubber Co. and Tel-U-Where Company of America.
Aeronautical Activities: U. S. Air Service, March 1918 to Jan. 1920; served at Wilbur Wright and Payne Fields; organized Cleveland Air Service, Coventry, Vt. in Sept. 1921.
Flying Rating: Reserve Military Aviator; certificate No. 5501.
Present Occupation: Manager and Chief Pilot, Cleveland Air Service.
Address: 438 Main St., Coventry, Vt.

Bridger Bailey Allen

ALLEN, BRIDGER BAILEY, Prosecuting Attorney; born, Sardis, Miss., April 3, 1891; son of A. J. Allen and Mary (Bridger) Allen.
Educated: High school; Miss. Heirh's Academy; West Tennessee State Normal; University of Memphis Law School.
Professional: 1916, Admitted to Bar; practiced law in Sunflower County, Miss. until May 1917.
Aeronautical Activities: Ground School, Urbana, Ill., March 1918; training at Scott Field and Ellington Field.
Present Occupation: Prosecuting Attorney for Sunflower County, Miss.
Address: Moorhead, Miss.

William Joseph Lowry

LOWRY, WILLIAM JOSEPH, Educator; born, Kingfisher, Okla., Feb. 8, 1894; son of James H. Lowry and Elizabeth (McGrew) Lowry; married, Lucile Monforten, Dec. 24, 1920.
Educated: Public schools of Kingfisher, Okla.; A.B. 1916, Kingfisher College.
Professional: Teacher since 1916.
Aeronautical Activities: Cadet, S.M.A., Berkeley, Calif., Nov. 1917 to Jan. 1918; Flying Cadet, Rockwell Field, Instructor's Course, Brooks Field, 1918; Instructor, Park Field, 1918-1919.
Flying Rating: Reserve Military Aviator, April 1918.
War Service: April 1917 to Sept. 1919.
Present Occupation: Principal of Schools.
Address: Whitehall, Mont.

George Clark Barrett

BARRETT, GEORGE CLARK, Grocer; born, Mason City, Iowa, Aug. 3, 1892; son of Charles C. Barrett and Ida Barrett.
Educated: Public schools of Mason City, Iowa; Iowa State College.
Aeronautical Activities: S.M.A., Austin, Tex., 1917; Cadet Bomber, Ellington Field; Cadet Flyer, Carlstrom Field, 1918; commercial aviation, 1920-1921.
Flying Rating: Reserve Military Aviator, May 1919.
War Service: Army, May 1917 to May 1918.
Present Occupation: Grocer.
Address: 203 N. Fed. Ave., Mason City, Iowa.

Bruce Gardner Leighton

LEIGHTON, BRUCE GARDNER, Lt. Commander, U. S. N.; born, Tunkhannock, Pa., June 1892; son of James Gardner Leighton and Marie (Ackley) Leighton.
Educated: Public schools of Tunkhannock; 1913, U. S. Naval Academy.
Professional: 1913-1921, Officer U. S. Navy.
Aeronautical Activities: Student Naval Aviation, 1916-1917; flying training at Pensacola Naval Air Stations; Executive Officer and Squadron Commander, U. S. Naval Air Station, Killingholme, England; in charge of squadron of flying boats and seaplanes on anti-submarine convoy and reconnaissance patrols over North Sea Area, June 1918 to end of war; ordered to duty in Office of Naval Operations, Navy Department, in connection with fitting out air force for duty with U. S. Fleet in Caribbean waters; Feb. 1919 to Dec. 1920, Squadron Commander of Seaplane squadrons, U. S. Atlantic Fleet; Bureau of Engineering power plant design section, Navy Department, Dec. 1920; member of Power Plant Committee, National Advisory Committee for Aeronautics; Joint Army and Navy Technical Board and Joint Army and Navy Helium Board; on establishment of Bureau of Aeronautics, Sept. 1921, assigned to duty in charge Power Plant Design Section of that Bureau.
Flying Rating: Naval Aviator No. 40, April 1917.
War Service: As above.
Present Occupation: Lt. Commander, U. S. N., Bureau of Aeronautics.
Address: Navy Department; home, 2034 Allen Place, N. W., Washington, D. C.

Roy Eustice Reed

REED, ROY EUSTICE, Manufacturing; born, Chanute, Kans., Feb. 16, 1895; son of Dr. J. J. Reed and Clara Reed.
Educated: Beloit High School, Beloit, Wis.
Aeronautical Activities: Air Service Mechanics School, Chicago, Ill., 1917-1918; Magneto Repair, Ellington Field; S.M.A., Berkeley, Calif.; Cadet at March Field, 1919; dual instruction under Lt. C. M. Riggperger.
Flying Rating: Reserve Military Aviator, May 1919; Pursuit Pilot.
War Service: U. S. Army Air Service, 1917-1919.
Present Occupation: Sales Manager, Beloit Bur Mfg. Co.
Address: 1256 Clay St., Beloit, Wis.

Ernest Evrett Tattersfield

TATTERSFIELD, ERNEST EVRETT, Aviator; born, Minneapolis, Minn., Aug. 7, 1 97; son of Richard Tattersfield and Anne Tattersfield.
Educated: Public schools; one year, University of Minnesota.
Professional: Pilot and aerial acrobat.
Aeronautical Activities: Ground School, University of California; training at Kelly Field, Brooks Field, West Point, Ky., and March Field; with Federated Fliers of Minneapolis and U. S. Aircraft Corp., Spokane, Wash.
War Service: 2d Lieut., A.S.S.R.C, March 1918 to May 1919.
Member: Aero Club of Spokane; Aero Club of Minneapolis.
Present Occupation: Pilot.
Address: 3616 Third Avenue South, Minneapolis, Minn.

Floyd Owen Schofield

SCHOFIELD, FLOYD OWEN, Real Estate Business; born, Macon, Ga., Jan. 19, 1896; son of Floyd Owen Schofield and Tibbie R. Schofield.
Educated: Public schools of Macon, Ga.; A.B. 1916, Mercer University, Macon, Ga.
Aeronautical Activities: Cadet, A.S.S.E.R.C., Jan. 1918; training at Camp Dick and Ellington Field to Feb. 1919.
Flying Rating: Certificate No. 2305.
War Service: As above.
Present Occupation: Secretary and Treasurer, Hatcher-Turpin Co., Real Estate, Insurance and Loans.
Address: 523 Mulberry St.; home, 100 Vineville Ave., Macon, Ga.

Gordon Hathorne Banchor

BANCHOR, GORDON HATHORNE, Real Estate; born, Newtonville, Mass., March 26, 1894; son of Franklin Banchor and Annie L. Banchor; married, Pansy M. Benton, Dec. 9, 1917.
Educated: Public schools of Newtonville, Mass.; Gem City Business College.
Professional: Benton & Hopkins Investment Co., Oberlin, Kans.; Farm Loans, Real Estate, Abstracting and Insurance.
Aeronautical Activities: Observer School, Fort Sill, Okla.; Aerial Gunnery School, Mt. Clemens, Mich.; graduate, Plattsburg, N. Y.
Flying Rating: Aerial Observer.
Present Occupation: Real Estate.
Address: Oberlin, Kans.

James Martin Curran

CURRAN, JAMES MARTIN, Commercial Aviation; born, Eau Claire, Wis., Sept. 7, 1891; son of Martin Curran and Susan Curran.
Educated: Public schools of Thief, River Falls, Minn.; B.S. 1914, University of Minnesota; M.S. 1916, University of Minnesota.
Professional: Buyer for seed company, 1916-1917; U. S. Air Service, 1917-1919; Ralph C. Diggins School of Aviation, 1920-1921.
Aeronautical Activities: Sept. 1917 to Jan. 1919, U. S. Air Service; flying instruction at Taliaferro Field; instruction at Lake Charles, La.; Chief Instructor, Ralph C. Diggins School, Jan. 1920 to date.
Flying Rating: Aero Club No. 4168; breveted in 1919.
War Service: Sept. 1917 to Jan. 1919.
Member: Aero Club of America; Aero Club of Illinois.
Present Occupation: Secretary and Chief Instructor of Ralph C. Diggins Co.
Address: 140 N. Dearborn St.; home, 4932 Sheridan Road, Chicago, Ill.

John S. McKibben

McKIBBEN, JOHN S., Machinist; born, Malvern, Iowa, Nov. 30, 1880; son of Edward McKibben and Carrie McKibben.
Educated: Public schools of Omaha, Nebr.
Professional: Bicycle racing, 1896-1899; motorcycle racing, 1899-1902; motor car racing, 1908-1910.
Aeronautical Activities: Mechanic on Farman and Curtiss planes, 1910-1911; qualified as balloon pilot in 1917; instructor, Missouri Aero Society.
War Service: Enlisted in Signal Corps, July 9, 1917.
Member: St. Louis Flying Club; Missouri Aero Society.
Present Occupation: Machinist.
Address: 3805 Laclede Avenue; home, 1811 La Salle St., St. Louis, Mo.

A. Livingston Allan

ALLAN, A. LIVINGSTON, Commercial Aviation; born, Bayonne, N. J., Dec. 20, 1886; son of William George Allan and Nellie (Hancox) Allan; married, Hazel Nelson, June 17, 1917.
Educated: Bayonne High School.
Aeronautical Activities: Graduated Curtiss Flying School, Hammondsport, N. Y., early in 1915; taught flying in England, Dec. 1915 to June 1916; Chief Civilian Flying Instructor, Air Service, U. S. Army, Aug. 1916 to Dec. 1918.
Flying Rating: Aero Club License No. 42, Expert Certificate No. 67.
War Service: Chief Civilian Flying Instructor, Air Service, Aug. 1916 to Dec. 1918.
Member: Aero Club of America.
Present Occupation: Manager and Pilot, Curtiss Flying Station, Atlantic City, N. J.
Address: Curtiss Flying Station; home, Hollywood Apts., Atlantic City, N. J.

Harrison William Flickinger

FLICKINGER, HARRISON WILLIAM, Captain, Air Service; born, Erie, Pa., March 10, 1888; son of William Byron Flickenger and Katherine (Kraft) Flickinger; married, Marguerite D. Weschler, Nov. 4, 1920.
Educated: Public schools; S.B., M.E. 1910, Mass. Inst. of Tech.
Professional: 1910-1911, Steel manufacturing; 1911-1916, structural engineer.
Aeronautical Activities: Aeronautical Engineer, 4th Aero Squadron, 1916-1917; commissioned 1st Lieut., Signal Corps, Aviation Section, June 1917; commissioned Regular Army, July 1920, Captain, Air Service.
Flying Rating: Airplane Pilot, Nov. 1917.
Present Occupation: Captain, Air Service.
Address: France Field, Panama Canal Zone; home, 502 N. Grove Ave., Oak Park, Ill.

George Ronald Dickens

DICKENS, GEORGE RONALD, Railway Business; born, London, England, April 30, 1892; son of Georges Dickens and Evelyn Maud Dickens; married, Louse Jacqueline Garrows, Sept. 9, 1919.
Educated: Central High School; University of Illinois; School of Military Aeronautics.
Aeronautical Activities: Cadet, Feb. to July 1918; 2nd Lieut., Air Service, July 1918 to Aug. 1919; flying training at Camp Dick, Scott Field, Carlstrom Field, Payne Field, Wilbur Wright Field and Dorr Field.
Flying Rating: Reserve Military Aviator; Pursuit Pilot.
Member: Aero Club of America; Aviators' Club of Pennsylvania.
Present Occupation: Transportation Department, Pennsylvania Railroad.
Address: 1923 Harrison St., Philadelphia, Pa.

Glenn H. Curtiss Wins Seaplane Decision

Circuit Court of Appeals Reverses Decision of District Court --- Awards Curtiss Broad Patent on Flying Boat

The United States Circuit Court of Appeals of the Second District on December 15, 1921, reversed the decision of the United States District Court of the Eastern District of New York and held that Glenn H. Curtiss was the first person to invent and operate a successful and practical hydroairplane or flying boat and has awarded him the broad patent thereon. The decision is final.

The decision is regarded as one of the most significant developments in aviation since the adjudication of the Wright patents, as it serves notice to the world that credit must go to the United States, not only for the first practical flights by machine-propelled aircraft from the ground and back to the ground, but from the water and back to the water, as well.

Justices Merrill Hough, Martin T. Manton and Julius M. Mayer, were on the bench, Judge Hough writing the opinion. The decision was rendered specifically against patent No. 1,312,910, which was issued to Albert S. Janin, of Staten Island, on Aug. 12, 1919, and which has been the subject of controversy in the Patent Office and the courts since 1913.

Curtiss' Pioneer Work

After the Wright Brothers successfully demonstrated mechanical flight, the next obvious step in realizing full dominion of the air was to construct and operate an airplane capable of taking off from and alighting on the water. Glenn H. Curtiss had been working on this idea as far back as 1908. So, too, had individuals in Europe, the most prominent of whom was the Frenchman Fabre, who in 1910 succeeded in getting off the water with a "tripod" gear, but failed in landing, repeatedly wrecking his machine including his final attempt. The court has held that Mr. Curtiss has been shown to have been the first man in the world to successfully arise from and alight upon the water. A situation of international importance is thus created.

Mr. Curtiss' work was carried on at his plant at Hammondsport, N. Y., as early as 1910 when preparing for the flight down the Hudson from Albany to New York, he had sucessfully alighted upon the water by means of pontoons attached to his landing gear. In the same year, 1910, he operated his first primitive canoe or boat-like structure of a hydroairplane on the surface of the water.

In 1911 he built and successfully operated the world's first flying boat. On January 24, 25 and 26, 1911, in the San Diego, Calif., harbor, he took off from and alighted on the water. His flights on January 26 were publicly announced and witnessed by newspapermen men and recorded in the press.

The Janin Patents

On Aug. 22, 1911, Mr. Curtiss filed application for a patent on the boat hull structure which has since been demonstrated and is now legally and finally recognized as the basis of all subsequent marine flying developments throughout the world.

On January 26, 1911, the very day that Mr. Curtiss' flights were being publicly observed in San Diego, Albert S. Janin filed application for a so-called land, water and air machine.

On July 31, 1913, Janin filed a subsequent application substituting for the previous application, but retaining the date of the first.

When Mr. Curtiss made application on Aug. 22, 1911, interference was declared with the prior application of Mr. Janin, but the Examiners decided in favor of Mr. Curtiss. The Board of Examiners in Chief reversed the ruling in favor of Janin and the Commissioner of Patents in turn, reversed it in favor of Curtiss. Janin carried the case to the Court of Appeals, of the District of Columbia, and won the decision by a majority of the court, after which Janin's patent was issued.

Mr. Curtiss then took the fight into the U. S. District Court to compel the Commissioner of Patents to grant him a patent for the invention. Judge Chatfield in 1919 dismissed the bill holding that Janin was entitled to the invention.

Another appeal was taken by Mr. Curtiss to the United States Circuit Court of Appeals of the Second District, and the District Court was reversed.

Judge Hough in his decision, declares the fundamental point to be whether Janin, in his original application, of Jan. 26, 1911, disclosed an operative hydroairplane or flying boat and then answered this in the negative. "Decision both in the District Court of Appeals and the Lower Court," reads the decision, "has rested on Janin's 'unchallenged reduction to practice of Jan. 26, 1911.' It seems to have gone unchallenged in the interference, argument was rested on Curtiss' earlier achievements in 1910; in this case it is successfully challenged, and we find that Janin reduced nothing to practice, because what he conceived and disclosed is, as an hydro-airplane, wholly inoperative, for it can not get out of the water—the rest is immaterial. Decision is grounded on this point; though we may say further, that in view of the proven unreliability of Janin and his witnesses, we think no reduction or conception can be assigned him earlier than Jan. 26, 1911, in which case Curtiss antedated him by at least two days.

One of the interesting features of the evidence produced at the trial was a sketch presented by Janin and claimed by him to have been made in 1899 when he was a carpenter lad of 19. This sketch illustrated a hydro-airplane having many modern features including the now famous Wright invention on the ailerons and the Joy-Stick control and other modern features invented years afterward by famous aeronautical engineers.

Statement by C. M. Keys

C. M. Keys, President of the Curtiss Aeroplane & Motor Corp., made the following statement:

"The decision in the Janin case is no surprise to me. The Board of Directors ordered the appeal to be made only after a thorough study of the evidence had made it quite clear that the rights to this invention lay with Curtiss. We are of course, gratified that the court has sustained that opinion.

"It is timely perhaps to state at this time the policy of the Curtiss Company with respect to the patents which it owns. The company in the past has had a definite policy to use its patents only as a manufacturing company, and has, perhaps, paid too little attention to the general use of these patents by others. The plane patents are, of course, made available to the major part of the industry as a whole under a cross license agreement which grants the right to use these patents to all members of the Manufacturers Aircraft Association on the payment of a fixed royalty for these patents, as well as the patents owned by others. The Curtiss Company owns, in all, some 200 patents covering both planes and motors. A few of them are, if they are sound patents, basic in their character; others are controlling patents in the manufacture of planes and motors as at present carried on; while still others are detail patents of some importance; and many, as is natural in a new industry, cover details of design and practice which have already become obsolete.

"Full study of these patents has been going on since September, 1920. This survey began because it was seriously intended to liquidate the Curtiss Company in case it was impossible to obtain relief from some of the burdens imposed upon the company during the war, as a result of the war. It is necessary therefore to know pretty definitely what a trustee for these patents in liquidation might reasonably hope to find them worth. As a result of this survey, we know pretty definitely what we have.

"A thoroughly definite policy has been laid down by the Board of Directors with respect to these patents. When competent engineers and counsel tell the company that certain specific patents are worth protecting, they must be protected, just as any other property belonging to the stockholders of the company is protected.

"In establishing this policy, however, the company has in mind that it will unless its rights are flagrantly invaded, make every effort not to interfere with the carrying on of experimental and research work in the aeronautical art. In this respect the policy of the company is identical with the policy of Glenn H. Curtiss before the company was organized and has been the policy of the company since its organization.

"We also must recognize that a somewhat free and casual use of other peoples' patents is natural enough in a new art. I do not believe that there is any widespread conscious intent in the aeronautical industry to appropriate without payment a property belonging to other people.

"We do not intend any wholesale litigation, but we are quite willing, should it be necessary, to test in the courts some of the more important Curtiss patents."

The Question of Priority

The particular claim that was framed by the Examiner in the Patent Office as the basis for the interference between Janin and Curtiss to determine the question of priority between them, is as follows:

"A hydro-air-machine comprising a main airplane supporting surface, lateral stabilizing airplane surfaces to create a difference of lift, a main water-borne central boat structure adapted to support the entire machine when on the water, and except for the airplane lift, constituting substantially the entire supporting element at all speeds so long as the boat structure is traveling in contact with the water, relatively small horizontal water balancing floats located below the supporting plane and beyond each side of said boat structure, said floats being located above the level of the boat bottom and provided with surfaces inclined downwardly and rearwardly, adapted to be acted upon by the rush of water when the machine loses its lateral equilibrium, and means for operating the stabilizing surfaces to create a difference of air lift."

Other Claims Allowed

There are, however, many other claims that have been made, and that have been allowed, and which will now go to Curtiss. Some of these claims, for example, are as follows:

"A heavier-than-air flying machine having an airplane, and a water-borne structure adapted except for the airplane lift to be substantially the entire supporting element of the machine at all speeds on the water, said machine having in the direction of each lateral end thereof a surface extending toward the water and adapted to be acted upon by the rush of the water as the machine loses its lateral equilibrium.

"A hydro-air-machine having a main airplane supporting surface, a water-borne central boat structure adapted to support the entire machine when on the water, and except for the airplane lift, constituting substantially the entire supporting element at all speeds so long as the boat structure is traveling in contact with the water, and lateral water stabilizing surfaces to create a difference of lift.

"In a machine adapted to be supported jointly by air and water while running on the water, an airplane adapted to be acted on by the air to exert a lifting effect, a centrally positioned floating means below the airplane adapted to support substantially the whole machine when at rest on the water and, except for the lift of said airplane, constituting substantially the entire supporting element so long as the machine is traveling in contact with the water, a relatively small float provided with a hydro-surface positioned in the direction of each lateral end of the airplane, and adapted to automatically balance the machine when either side becomes depressed.

"In a machine of the character described, an airplane adapted to support the whole machine in the air, lateral stabilizing surfaces to create a difference of air lift, a buoyant structure adapted to support the entire machine when at rest on the water and except for the lift of said airplane constituting substantially the sole supporting element so long as said machine is traveling in contact with the water, said buoyant structure having an upwardly inclined forward hydro-surface acted on by the rush of water and a substantially flat bottom, said airplane being so attached to said buoyant structure that when it is speeding in contact with the water said airplane is maintained at substantially a flying angle of incidence, whereby the machine rises to the top of the water and the head resistance of the water is decreased, and a propeller operating on the air to drive the whole machine forward until the air lift on said airplanes raises the machine out of the water."

Shape of Hull

It will be observed that the last claim, which is one of the claims previously granted to Janin, brings in specifically the shape of the boat bottom in the operation of the machine on the water, but makes no reference to maintaining the lateral balance by the lateral water-acting floats.

"A heavier-than-air flying machine having an airplane, and a main water-borne structure adapted to travel in contact with and be supported by the water and constituting substantially the entire supporting element when the machine is speeding in contact with the water, an inclined hydro-surface toward each lateral end of the airplane and acted on by the rush of water, said airplane having a movable surface at each side under control of the operator to create a difference of air lift whereby the operator may depress either side of the machine when traveling in contact with the water and thereby force the hydro-surface on that side deeper into the water to create a drag on that side of the machine to aid in steering the same and correspondingly raise the hydro-surface on the elevated side so that it is substantially out of the water before the wing tip in the depressed side comes in contact with the water.

"A heavier-than-air flying machine having an airplane surface and a centralized water-borne structure adapted to support the machine on the water and except for the air lift being substantially the entire support of all speeds, said machine having in the direction of each lateral end thereof, a downwardly and rearwardly inclined narrow hydro-surface extending toward the water and adapted to be acted upon by the rush of the water as the machine loses its equilibrium."

Patent to be Issued

S. Mortimer Ward, Jr., of the firm of Ward, Crosby and Smith, patent counsel for the Curtiss Company, in charge of this suit, states, that in lay language, it may be said that the patent that will now be issued to the Curtiss Aeroplane and Motor Corporation, upon the invention of Glenn H. Curtiss, patent for which was formerly granted to Albert S. Janin, will cover in one aspect, a hydroairplane, whether of the flying boat or pontoon type, having a main water-borne structure capable of hydroplaning and supporting substantially the entire machine upon the water, said structure being so related to the wings of the craft as to enable the craft to be driven at hydroplaning speed upon the water and successfully flown from and back to the water, and with balancing means arranged laterally with respect to the water-borne structure, for engagement with the water, to maintain lateral balance of the machine during operation on the water.

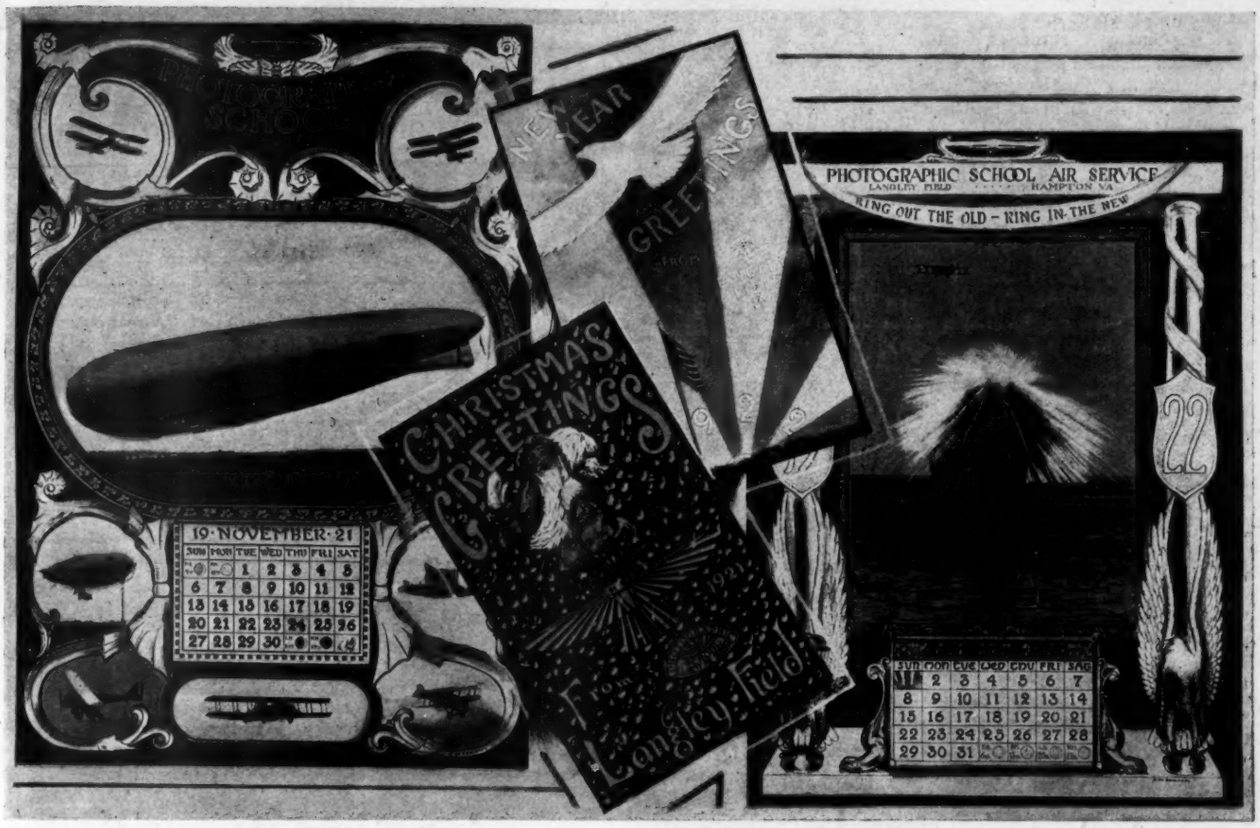
Wright Engine Instruction Book

The Wright Aeronautical Corp. has just issued a useful instruction book dealing with Wright engines.

The volume is bound in oil and water proof imitation leather, and is divided into three sections. The first is devoted to a description of their engines; the next deals with installation and operation; and the third division takes up the question of overhauling and repairing. There are also chapters giving tabulated data on Wright engines, and a list of tools necessary for their handling and repair.

The book is profusely illustrated, nearly all of the drawings being as plain as paper and ink can make them, the idea being to make the entire volume clear to everyone who is to handle these engines, be he pilot or mechanic.

New Year Greetings from Langley Field



The photographic school of the Army Air Service, at Langley Field, sent out the Christmas and New Year greetings illustrated above

THE CONTEST COMMITTEE
of the
AERO CLUB OF AMERICA

Requests all owners (individuals or companies) of aircraft in the United States to register in order that the Committee may

1. Send, gratis, the Aero Club's Contest Rules for 1922, and notices of proposed aviation meets.
2. Assist local Clubs in organizing contests best adapted to the types of airplanes in their locality.
3. Have a record of airplanes and pilots available throughout the country in times of emergency.

USE THIS FORM.

CONTEST COMMITTEE, AERO CLUB OF AMERICA;
11 East 38th Street, New York City

Date .....

I / We) have ..... (Give number)
(Airplanes)
(Seaplanes)
(Flying Boats)
(Airships)
(Free Balloons)

Make and Model .....

Motor, Make and Model .....

Maximum speed of .....m.p.h.

Capable of continuous flights of ..... miles

Cubic capacity of gas bag ..... cu. ft.

Underwriters' Laboratories Aircraft Registration No. .....

Pilot's name .....

Address .....

Owner's name .....

Address .....

Foreign Aeronautical News

China

General Pan Chu Ying has been appointed Director of the Aeronautical Department

T. H. Chang, a returned Chinese student from the United States, has been engaged by the Aeronautical Department as pilot instructor in the Nanyuang Flying School. He is a graduate of the Virginia Military College and has received a complete course of instruction in Aeronautics in the Diggins Aviation School. He has passed the examination for International Pilot's license.

The section between Peking and Tsinan of the Peking-Shanghai Air Line has been carrying mails regularly since July 1st. It is now planned to carry passengers also, the fare for a single trip, either direction, being $50.

On June 27, a "Vimy-Commercial" named in Chinese "Ta Peng" or "Great Bird," had two trial flights between Peking and Tsinan, a distance of 180 miles, without accident. In spite of the rather rough weather, the machine accomplished her maiden trip between these two points in 2 hr. and 15 min. The return trip from Tsinan to Peking occupied 3 hr. and 15 min. its progress being retarded by a strong northern gale.

France

From France it is reported that the French Air Ministry has recently acquired a new aerial lighthouse which is said to eclipse entirely anything that has hitherto been attempted in the way of lighting up the air routes. The new lighthouse, which it is stated is to be erected on Mt. Africa, near Dijon, at an altitude of 1500 ft. above sea level, will throw a light which, in clear weather, it is expected will be visible for a distance of 200 miles.

Mexico

According to the Nov. 28 issue of *Commerce Reports*, issued by the Department of Commerce, commercial aviation in Mexico is rapidly expanding, and thus giving proof of the increasing importance of this branch of the automotive industries. The Secretary of Communications of Mexico, according to *El Campo* of Sept., 1921, has made arrangements with a foreign company with a view to establishing an aerial transportation service for passengers and cargo between Mexico City and Tampico. The operating company made the first trip with passengers, mail, and cargo on Sept. 1, taking 2½ hr. from Mexico City to Vera Cruz and 1 hr. from Vera Cruz to Tampico. When the shipment of the fifteen machines arrives, the services will be extended to include San Luis Potosi, Monterey, Laredo and Matamoros. A special service will be established between Tampico and Laredo.

A commercial aerial service between Juarez City and the City of Chihuahua is definitely planned. The distance between the two points is approximately 230 miles, and the journey takes 10 hr. by rail and 12 hr. by automobile. The airplanes, which will be piloted by American aviators, are expected to make the journey in less than two hours. Special flights are planned to mining camps and other nearby places, with the consent of the mine owners. The landing fields in Juarez City have been chosen, and permission has been obtained from the authorities of El Paso to use the field of Fort Bliss, near the frontier, for landing purposes.

The Netherlands

From a traffic point of view it appears that Amsterdam has become the third largest air port in Europe. During the period between April 14 and Oct. 3, no fewer than 1,000 machines passed in and out of the station and carried—in addition to large quantities of goods and mail—1,511 passengers.

Siam

It appears that the Government of Siam is taking considerable interest in aviation. Recently, it is reported, airdromes have been opened in various provinces, and machines are being or are to be imported from France and England to Bangkok. As the roads are not of the best, airplane services should have the effect of speeding up considerably the inter-communication between the various provinces.

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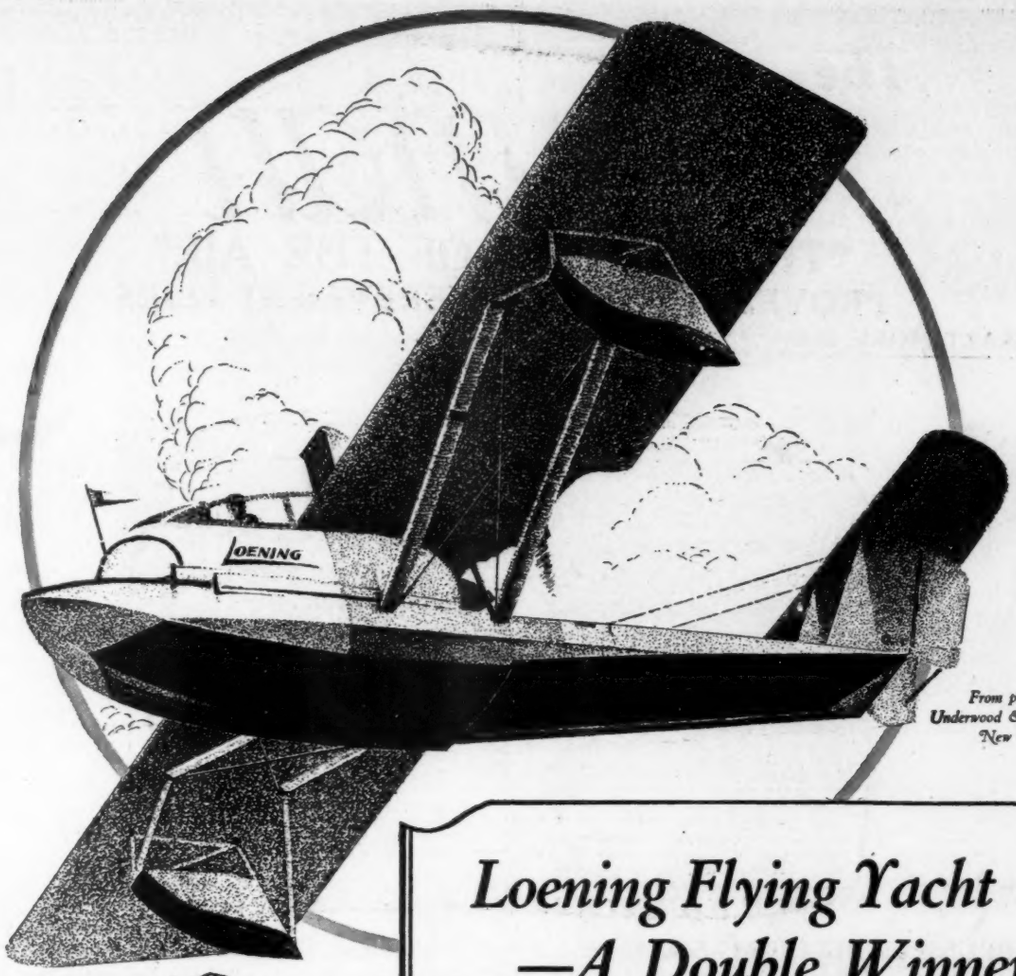

From photo by Underwood & Underwood, New York.

"Babe" hoped to be in the line-up today, but would be bound by Manager Stewart's orders.

Seaplane Flies 188 Miles in Eighty Minutes

Craft, Carrying Four, Sets Record for Its Class in Flight From Aberdeen, Md., to Port Washington

Clifford Webster Pilot

Traveled at Height of 10,000 Feet; Same Machine Had Made the Altitude Mark

A new world record for seaplanes was established yesterday when a Loening flying yacht flew from Aberdeen, Md., to Port Washington, L. I., a distance of 188 miles, in eighty minutes, more than two miles a minute. The distance from Philadelphia to the Battery, eighty-eight miles, was covered in thirty-two minutes.

Clifford Webster, pilot of the machine, was handicapped by strong wind currents which made it necessary for him to fly at an altitude of 10,000 feet. He said last night that he found favorable flying conditions at that altitude. The usual altitude for such speed ma-

Loening Flying Yacht —A Double Winner

The clipping reproduced from the New York Tribune tells of the latest achievement of the *Loening Flying Yacht.*

This sturdy plane is a double winner. For, three weeks before making this speed record, she established a new altitude record for her class. Carrying pilot and three passengers, she nosed her way skyward until the sealed barograph registered 19,500 feet.

Long months of painstaking experiment in design—careful testing of materials to be used in construction—preceded these achievements. Every effort was expended to obtain the finest equipment. And it is a significant fact that the *Loening Flying Yacht* is

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The Farman

"THE MARVEL OF THE AIR"
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At BALTIMORE, MD. 2d Aero Exhibit - Baltimore Flying Club Dec. 10th.
Baltimore American - Dec. 11th.

The Farman sportplane, manufactured in France, was looked upon as the most remarkable plane exhibited yesterday. Flown by D. H. Robertson, who is seen lifting his "tail" off the ground, the tiny craft gave a creditable performance. Robertson "took off" in 10 yards and landed in 13. The sportplane weighs 430 pounds, motor included, has a wing spread of 33 feet, and is 19 feet long and is a two-seater.

At BRUSSELS, BELGIUM - Sept. 3d-4th. Aero Club of Belgium Flying Meet. Winner of International Touring Airplane Contest with a 20% higher score than its nearest competitor in a field including the best French, English, Italian, Dutch, etc. Touring Airplanes.

At OMAHA, NEBR. International Aero Congress Meeting - Nov. 4th - 8th.
Omaha World Herald - Nov. 5th. Omaha Bee - Nov. 5th.

BY PAT DOZIER.

Valuable presents come in small packages. Ask any girl and she will tell you that no solitaire ever came in a candy box. And, while you are interrogating, ask any person on the Aero Congress field and you will have the old adage borne out.

All this preamble is by way of getting to the subject of the shaftless elevator, better known as the Farman plane, now on exhibit at the new flying field. This miniature, that is not large enough for a circle of spectators to get around, was the object of much attention yesterday afternoon, and when Pilot D. H. Robertson nosed the little gray plaything straight into the heavens after running less than thirty feet for a takeoff, hearty laughs, instead of the usual applause, greeted the performance.

higher above the field.

Capt. H. D. Robertson in his Sport Farman biplane won several rounds of applause for his stunt work. The diminutive Farman is one of the most remarkable trick planes made and Captain Robertson put it through loops, step-downs, falling leaf twists and other stunts.

Another stunt performer was F... Pahl in his Lark mo...

was looking.

Performances by the Sport-Farman biplane owned by Wallace Kellett of Philadelphia, was by far the stunt feature of the day, while H... the Ransom K...

Space limitations permit the printing of only a very few extracts from the many news accounts describing the wonderful performances of the Farman witnessed by government officials, aeronautical men and press representatives. Brief accounts of its flights at Etampes, France, Kansas City; Mo.; New York and Washington will appear in following numbers of "*Avitaion*".

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" 95- " "	- F. A. Donaldson in "OX-5 ORIOLE"

"CURTISS" Seconds

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OMAHA 90-MILE RACE	- N. C. Torstensen in "K-6 ORIOLE"
" 75- " "	- Casey Jones in "OX-5 ORIOLE"

"CURTISS" Thirds

OMAHA 90-MILE RACE	- R. S. Miller in "K-6 ORIOLE"

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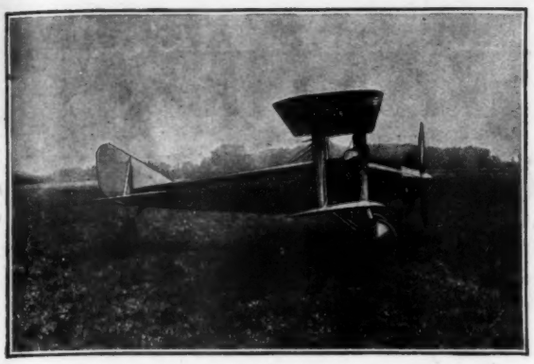

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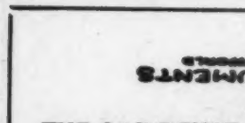

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